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**Supporting self-care in nutrition with pregnant young
adult women**

Thesis

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Thesis Abstract

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Pregnancy is an important moment in the women's' life. Often pregnant women decide to change their diet to healthier one during the early pregnancy, because they wish to make a healthier life for their child. Nurses' job is extremely important in supporting the self-care of the nutrition of the woman during pregnancy.

The aim of this thesis was to find the best ways to bring information to the pregnant women and supporting the self-care in upholding a healthy diet. The thesis will also state the most important information about the healthy diet during pregnancy.

The results of the thesis are the healthy diet during pregnancy, the nutrition needed for the healthy growth and development of the fetus. There are also some substances that are not recommended during pregnancy and those are also discussed in the thesis.

The thesis also describes the most effective ways to teach women about the nutrition during pregnancy. The thesis explains the pregnant women's perception of the support given by health care professionals' concerning the nutrition in prenatal care and their successions on what should be concentrated on and how they feel women should be approached.

Keywords: Pregnancy, prenatal, Nutrition, self-care, young adult, support, counselling

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1 INTRODUCTION

The thesis topic is nutritional importance and supporting self-care with pregnant, healthy young adult (ages 18 to 39) women during prenatal care. The topic of nutrition during pregnancy was chosen, because in prenatal care, nutrition is often highlighted, and it affects the health of both the mother and the child (Palombarini et al, 2014). Nutrition is crucial during pregnancy, infancy and childhood concerning the development, and tissue growth. The mothers' nutrition is important in the development of the fetus. (Päivänsara 2013.) The time of the pregnancy is a good time to start the change for healthier life and many times the starting families will want to change their health routines in the beginning of the pregnancy (Hasunen 2004).

The prenatal care done in clinics is one of the most important factors in receiving information and help for pregnancy (Palombarini et al 2014). The amount of basic visits to prenatal care is at least eight times in which the basic health of the mother and the development of the fetus is mapped (Pouta et al 2012). The amount of the prenatal care visits is about to be changed to less with healthy pregnancies to prevent extra charges. Still during these visits, discussion and support from the nurse can help the pregnant women in for example making good decisions on their diet. (Van der Meerh 2013.)

Support is according to Oxford Dictionaries (15.9.2014) defined as assistance, approval, comfort, or encouragement, and be actively interested in and concerned for the success of someone. Young adult is according to Erikson's theory of stages of psychosocial development, the ages between 18 and 39.

Nutrition is described in the Oxford Dictionary (25.9.2014) as the process of providing or obtaining the food necessary for health and growth. Pregnancy is defined as a period of 38 weeks from fertilization to giving birth, during which the fetus develops inside the mothers' uterus (Davidson et al 2012).

2 NUTRITION DURING PREGNANCY

According to Päivänsara (2013), the optimal nutrition during pregnancy is normal and healthy nutrition that's needed in everyday life. Nutrition should be versatile and corresponding the need for energy for normal life for the mother and also for the growth of the fetus. The frequency of the meals is highlighted, as it should be routinely during the day.

A good nutrition during the pregnancy ensures the growth and wellbeing of the fetus as well as the mothers and eases the progression of the pregnancy and prevents future chronic diseases of the child (Päivänsara 2013). The most critical time when proper nutrition is needed is during the cell division, when the changes caused by nutritional insult may become permanent. On the other hand, during the stage when cells are mainly just enlarging, the changes can be reversible when returned to normal nutrition. (Davidson et al 2012.)

Päivänsara (2013) discusses about the specific needs of the special diets. She reminds that all that have a special diet, such as lactose intolerants, coeliac disease, allergies and vegetarians should ensure the consuming of a diet that has enough energy and all the needed nutrients.

2.1 Need for energy

Päivänsara (2013) tells that the energy received from nutrition should include the mothers and the fetus's energy need. Mothers do not need to raise their energy intake so much, as the pregnancy does not increase the needed intake so much, only around 150 kcal during the early pregnancy and later 300 kcal. The need for energy is individual and the best way to ensure sufficient energy sustained is to observe the weight gain during pregnancy. (Hasunen et al 2004.)

Excessive energy received from nutrition will lead weight gain that may also later lead to overweight, high blood pressure values and gestation diabetes. Smaller than needed energy level in nutrition will on the other hand lead to affecting the growth of fetus and increasing maybe the risk of preterm delivery. (Päivänsara

2013.) The plan for weight gain during pregnancy should always be individualized. In the plan the starting weight and previous changes as well as differences structure of the woman should be considered (Pouta et al 2013).

The energy received from nutrition is mainly from carbohydrates, fats and proteins. The energy is mainly received from carbohydrates, but if they would be unavailable protein will then be used as a source of energy. This would lead then to protein being cut from the growth material of the fetus. (Davidson et al 2012.)

2.1.1 Carbohydrate

Carbohydrate is the main energy resource and it can be found in starch, sugars and fiber. Fiber is the only one of these substances that doesn't absorb in the body. The need and tolerance of carbohydrate is unique, but recommended amount is around 2g per kilogram. (Päivänsara 2013.)

Päivänsara (2013) explains that in the normal diet recommendations, the unnecessary carbohydrates, such as glucose and white flour are not recommended as they contain a lot of energy but nearly no nutrients. Vegetables, berries and fruits on the other hand are recommended because they have more useful nutrients.

There are different sorts of sugar, such as glucose, fructose, sucrose and lactose. There are also sugar alcohols that include xylitol, sorbitol and maltitol. With sugar alcohols, there is a need to be careful as they might cause stomach ache. (Päivänsara 2013.)

The grain products are important sources of energy, carbohydrates and protein. They're also good source of fiber and they have a lot of vitamin B and minerals. Daily consumption of full grain products is recommended. (Päivänsara 2013.)

Päivänsara (2013) describes the fibers as a division of carbohydrates and they are divided to water-soluble- and insoluble fibers. The insoluble fibers are constructed as bran and they improve the working of digestion. The soluble fibers can be found in vegetables, berries, and fruits. Pouta et al (2013) recommends that

wholegrain products such as porridge and granola should be eaten in almost every meal. Päivänsara (2013) explains the difference between the fiber from bran and from the vegetables, berries and fruits. The bran-constructed carbohydrates better the function of digestion whereas the vegetables etc. lower the cholesterol concentration in blood.

A diet that has a lot of carbohydrates is good to the body's sugar- and fat metabolism. It also levels the blood sugar values, increases the feeling of fullness and supports the function of digestion. The amount of fiber is recommended around 25 to 35 g per day. (Päivänsara 2013.) Changing low fiber bread to wholegrain is extremely advisable (Pouta 2013). The sufficient amount of fiber is important for pregnant women because it prevents constipation (Päivänsara 2013).

2.1.2 Fats

The value of fats in the diet of pregnant women is important and can be seen in the complete absorption of fats during pregnancy. This results in increased lipoproteins, serum lipids and cholesterol. (Davidson et al 2012.) The fats hold many important fat-soluble vitamins such as vitamin A, D and E. An important fat to receive in everyday life but also very important during pregnancies is the omega-3 – fat acids, that are essential for the development of the nervous system, hormonal function and eye sight of the fetus. The main source of unsaturated omega-3 is from greasy fish and linseed oil. Sometimes the diet doesn't contain enough of these and extra supplements are recommended. (Päivänsara 2013.)

2.1.3 Protein

Päivänsara (2013) explains that proteins are made of 20 different amino acids, and that they are for example the building material of hormones, neurotransmitters and enzymes and they participate in the blood circulation and the controlling of water balance. The amino acids received from the protein of animal meat consists all the essential amino acids, whereas the proteins received from vegetarian food

are not as comprehensive and need a more versatile diet to ensure the receiving of all the essential amino acids.

Proteins should not be all received in one meal, but as small portions during the day. The extra received protein will go into the body's storage as fat. The need for extra protein during pregnancy is not much, merely 30g more than in a normal diet. (Päivänsara 2013.) The need for protein daily is 60 g, divided to multiple meals during the day (Davidson et al 2012).

2.2 Fluid intake

The tasks of liquid in the human body are for example enabling metabolism, taking part in the regulation of the sodium- potassium- and the acid balance. The body liquid also imports nutrients and substances to cells and metabolic waste away from the body. The liquid takes part in the construction of cells, in the digestion and thermoregulation. (Päivänsara, 2013.)

According to Päivänsara (2013) the body loses daily from two to three liters of water because of normal body functions. Usually the need of fluids is satisfied with the help of normal eating and drinking, but sometimes for example the pregnancy and physical exercise can cause the need to increase.

2.3 Vitamins and dietary minerals

The vitamins and dietary minerals are necessary for human beings. All 13 vitamins have their own, individualized task that cannot be replaced by any other composition and that they should be received from nutrition as the body itself cannot produce them. During pregnancy the need for vitamins and dietary minerals increases 15-50 percent. Especially iron, vitamin D and folate are needed even more and access to them should be ensured. (Päivänsara 2013.)

2.3.1 Vitamins

Vitamins are divided to water- and fat-soluble groups. The differences can be seen in the fact that water-soluble fats are not restored in the body and need to be received daily from the nutrition. Fat-soluble fats on the other hand stay in the system. (Päivänsara 2013.)

Davidson et al (2012) talks about the group of vitamin B's that include many different sort of B vitamins, such as B1, B2, B6, B12, Folate etc. These vitamins are received from nutrition and takes part for example in cell respiration and glucose oxidation. The vitamins are mainly received from normal nutrition, but sometimes folate is not received enough. Folate is according to Päivänsara (2013) a water-soluble vitamin from the group of B-vitamins. It's essential material in cell division and formation of blood cells. Pouta et al (2013) explains that the need for folate is at its highest in the first four weeks when the nervous systems neural tube develops and closes. This is when the shortage of folate can lead to damage in the nervous system. Päivänsara (2013) explains that folate is mostly found in organs, beans, soy and wheat. Pouta et al (2013) states that the folate from nutrition is easily destroyed during the oxidation and heating in preparing food.

Vitamin D is a fat-soluble vitamin that takes part in the development of bones and teeth and the function of metabolism (Päivänsara 2013). Sufficient percentage of the vitamin D is requirement to supporting the fetuses' need of calcium. The supply is connected to mild weight gain during pregnancy, developmental disorder of the fetal bones and risk for having chronic diseases. The preferred daily dose of vitamin D during pregnancy and breast feeding is 10 micrograms every day of the year. (Pouta et al 2013.) Vitamin D is also received from the synthesis of sunlight on the skin, although in the northern latitudes such as in Finland the exposure to sun is limited during the winter months (Davidson et al 2012). The best sources of vitamin D are f. ex. greasy fish, vitaminized milk products, margarines and mushrooms (Päivänsara, 2013). Greasy fish should be eaten at least twice a week, alternating fish species to prevent any damage from pollutants. Fish is part of a good nutrition because it's D3-vitamins and large quantity of vitamin D. (Pouta, 2013.)

Vitamin E is an essential vitamin to be received from nutrition, as it takes part in many different parts in the body. It plays an important role in binding oxygen to itself, thus preventing oxygenation of other substances in the body. Vitamin E takes also part in some enzymatic and metabolic reactions. Vitamin K is important as its received mainly from nutrition and is essential in the synthesis of prothrombin, so its essential ingredient in blood clotting. (Davidson et al 2012.)

Vitamin C is classified as water-soluble and takes part information and development of connective tissues and the vascular system (Davidson et al 2012). The need for vitamin C increases during pregnancy and can be received for example from citrus, fruit, rose hip etc. vitamin C also advances the absorption of iron (Päiväsara 2013).

2.3.2 Dietary minerals

Dietary minerals are inorganic compounds that are found in nature and that are necessary for everyday physiological functions. Some minerals received from nutrition might also be harmful, such as heavy metals. (Päiväsara 2013.)

Iron is needed for the production of blood cells, in cell breathing and transferring oxygen in the body (Davidson et al 2012). The need of iron increases in pregnancy because of the increased amount of blood (Päiväsara 2013). The fetal liver will also store iron especially in the last trimester to compensate for the deficiency of it in their nutrition during the first few months (Davidson et al 2012). The iron in nutrition is received from red meat and organs, as they contain a lot of heme iron. Also plant products, for example in spinach and cabbages have a lot of iron, but it is less absorbable non-hemi iron. Half of the needed iron can be received from nutrition; the rest should be received either from iron supplement or from the mothers iron storage in the body. (Päiväsara 2013.) The supplement should be started after the week 12 if the hemoglobin is low, under 110g/l (Pouta et al 2013).

According to Davidson etc. (2012) Folic acid, the chemically produced form of the folate, and iron are the only recommended nutritional supplements added to the

normal diet. Other needed vitamins are supposedly reserved from normal diet, although some people still prefer to take also additional vitamin supplements.

Calcium is a common mineral that takes part in the metabolism, transmission of nerve impulses, and contraction of muscles, regulation of blood pressure and in the enzyme reactions. In the fetal development it takes part for example in the growth of the bones and teeth of the fetus. (Päiväsara 2013.) If the needed amount of calcium is not received from nutrition, the amount needed for fetal bone growth is taken by demineralizing of maternal bone (Davidson et al 2012). The recommendation of calcium received from nutrition during pregnancy is as big as 1 g per day and it can be found mostly in milk products and is also available in supplements (Päiväsara 2013).

Other dietary minerals needed in diet are copper that to assist the use of iron (Päiväsara 2013), zinc that's essential to fetal growth and iodine that is essential part of thyroid hormone thyroxin (Davidson et al 2012). Selenium is also an important mineral in diet that protects from excessive oxygenation in the cells and binds heavy metals to itself. Also magnesium and sodium are dietary minerals that are essential in the diet. (Päiväsara 2013.)

3 HARMFUL NUTRIENTS DURING PREGNANCY

3.1 Vitamin A

A not recommended nutrient is the vitamin A, a fat-soluble vitamin that takes part in growth of eyes, hair and skin of the fetus as well as the function membrane (Päivänsara 2013). The reason for avoiding vitamin A is the possible derive to increased risk of miscarriages and malformations (Hasunen et al 2004). Maternal storage should be sufficient and this way no additional supplement of vitamin A is needed during pregnancy (Davidson et al 2012). For example the liver contains a lot of vitamin A, and should be therefore avoided during pregnancy (Päivänsara 2013). The liver also contains a lot of heavy metals that are also dangerous to the fetus (Hasunen et al 2004). Both Päivänsara (2013) and Hasunen et al (2004) recommend the pre-stage of vitamin A, beta-carotene that is received from fruits and vegetables, for example carrot. Beta-carotene is harmless to the fetus even in large portions.

3.2 Caffeine

According to Päivänsara (2013) coffee and other caffeine containing beverages should be limited to maximum of 300mg per day that is, 2 to 3 cups per day. This is to avoid the caffeine's tendency to prevent the absorption of vitamins in the body. Hasunen et al (2004) agrees with the recommendation of avoiding caffeine and explains that the women might also be repulsed by caffeine during pregnancy and it might also cause heart burn.

3.3 Salts

Lessening the amount of salt received from nutrition is recommended because of its habit of causing edema (Päivänsara 2013). Rising blood pressure and higher burden to the kidneys are also consequences of high amount of salt in nutrition (Hasunen et al 2004). Not only preventing salt, but also keeping in mind the

quality of them is important. For example using mineral salt, that doesn't contain so much natriumchloride. A good way to prevent too much salt, that is to flavor with different sort of herbs, spices and vegetables. (Päivänsara 2013.)

3.4 Alcohol

Alcohol is commonly known to be a substance to be avoided during pregnancy. A safe amount of usage is not known, but 1 to 2 doses in a week have not been shown to cause problems to the mother or fetus. High volumes of alcohol used during pregnancy will cause harm to the growth and development of the fetus, as it can easily go through the placenta. (Hasunen et al 2004.)

3.5 Food additives

Foods today contain a lot of additives, such as artificial sweeteners that are usually found in many foods (Davidson et al 2012). Many of them do not exceed their limitations in normal nutrition, but sodium cyclamate is given a limit of 7 mg per kilogram per day and the use of it is not recommended during pregnancy (Hasunen 2004).

Liquorice and salty liquorice are not recommended during pregnancy as Hasunen et al (2004) states that they contain a lot of glycyrrhizin. This substance can cause edema and rise of blood pressure and can be connected to preterm labor.

3.6 Toxins from environment

Heavy metals and environmental toxins are received from food substances. Heavy metals found in everyday food, such as mercury, lead and cadmium that are harmful for humans can also accumulate in the body. In Finland, these substances are received in nutrition well under the risk values. (Päivänsara 2013.)

Although eating fish is recommended in diet during pregnancy, Hasunen et al (2004) warns from eating northern pike and a lot of the same species to prevent

large quantities of mercury and other environmental toxins. Davidson et al (2012) also speaks against eating specifically some fish, because of mercury caused negative effect on the fetuses' cognitive function.

Fish can also contain other environmental toxins, such as dioxins and polychlorinated biphenyl. Larger quantities of the toxins can be found for example in herring of Baltic Sea whereas the fish from inland lakes and rivers contain fewer toxins. (Päivänsara 2013.)

4 GUIDANCE OF PREGNANT WOMEN

Many of the pregnant women know the value of good diet during pregnancy and from the beginning of pregnancy try to change their diet to healthier and more supportive towards the development of the fetus. They also see nutritional counselling as an important part of the pre-natal care. Still the women have temporal collapses in their diet and wish to have more support from the health professionals and that all counselling would be individualized from the point of view of the mothers' socioeconomic issues. (Palombarini et al 2014.)

4.1 Information giving

Nurses should concentrate to the attitude, possibilities and situation of life while counselling, since they affect the results the guiding of pregnant women considerably. Individualized counselling is best done together with the mother and the family and in the guidance situation it's recommended to negotiate a common goal that captures the family's needs, hopes and will to change. From the goal a common strategy is created. (Pouta et al 2013.) The normal prenatal care consists of minimum of eight check-ups that all consists of supervising the development of the fetus and basic health of the mother (Pouta et al 2013). No notable difference can be found between the nutritional results of the mothers receiving counselling four times and those who had been given the normal counselling in the pre-natal care (Kinnunen 2009).

The best way to give guidance that is easier to learn is by concentrating on one subject at a time and having multiple counselling times to make the change more lasting (Pouta 2013). The information should be given from a scientific but also from a technical and practical point of view to ensure the understanding of information (Palombarini et al 2014). Acceptance of knowledge

4.2 Acceptance of knowledge

Sometimes women who are counselled about the diet have problem accepting the knowledge if it's against their social, emotional, cultural or religious believes. Set and strict rules might bring a negative reaction since the rules might be against their previous believes. This should be corrected by flexible interventions that take into account the mothers possible disagreement. The attitude towards new information is often positive, but the result can still be affected by such things as the people's social, emotional, cultural and religious factors, and these things should be considered when planning the counselling situation. The previous knowledge and information received from other sources such as family and friends and community affect also the counselling situation. Sometimes the scientific information can either overlap, clash or agree with the mothers cultural believes. (Palombarini et al 2014.)

4.3 Use of knowledge

Some women might have barriers that prevent the fulfillment of the planned diet. These might be the attitude towards following the new diet, some might have problems with financial resources that prevent them from buying some food products. Also some unpleasant symptoms caused by pregnancy might have negative result on the upholding of the diet. The women found that discipline and willpower were also important to the change, not only the will to change. (Palombarini et al 2014.)

The learning of new knowledge and behavior is a long process, and it can take a long time to digest. This is why slower teaching gives the mother the time to learn and change the eating habits so that they'll continue healthy even after the pregnancy. (Pouta et al 2013.) The control visits are there to help the mothers to cope with the changing nutrition and the women felt that the follow ups were important to support in keeping the heathier diet ongoing (Palombarini et al 2014).

5 GOAL AND PURPOSE OF THE THESIS

5.1 Goal

The nutrition is a big issue for pregnant women and they wish to have a lot of education and information from professionals (Palombarini et al 2014). This is why the thesis topic was chosen and the goal of the thesis was set to find information needed in the effective guidance situation for pregnant women and their nutritional habits. The information searched is important, because it is the same content discussed in prenatal care meetings and to help the women to take care of their nutrition and this way the health of the mother and fetus. The discussion can be a major factor in influencing the nutritional intake of the pregnant women during pregnancy and after birth.

5.2 Purpose

The thesis is mainly aimed to the nurses working in prenatal care and the purpose of the information collected in the thesis is to help the nurses plan the guidance situations. For achieving the goal the thesis was set to find what kind of special nutrition the pregnant women need and what would be the best way to bring that knowledge to them. The purpose of the guidance situation is that the women achieve and uphold a healthy nutrition during and after pregnancy. The thesis aims also to give information that will help nurses working in prenatal care to assist the self-care of pregnant women in their diet.

5.3 Research questions

The research questions of the thesis are:

- What nutrition should the pregnant women receive in their diet?
- What ingredients are bad for the growing fetus?

- What kind of information should the nurse possess to support the self-care of pregnant women concerning their nutrition?

6 METHODOLOGY

6.1 Literature review

In the thesis a literature review was used as the data collection method. Literature review discusses the published information in an organized pattern and both summarizes and synthesis the subject (The writing center 2012). Literature review summarizes the literature from many different sources objectively, without the authors' opinions (Cronin et al 2008). The literature review is a good way of finding the relevant written information about a specific area of interest from the large quantity of written material available. Because of the large quantity of information available, literature review is an important tool in searching the relevant information and bringing it together for the use of others. (Aveyard 2010.) The literature review and the analysis of the data should make the data more understandable and collect the large amount of data available for reader (Elo & Kyngäs 2008).

Cronin et al (2008) describes the literature review as a 5 step process where the topic is first chosen, then literature is searched. The next step is to read and analyze the literature and then to write the review. Literature reviews data searching and selection should have a clear strategy where the research questions are considered at every decision. The last phase is to mark the references that will together with the written information create a comprehensive background of the current knowledge of the specific area of interest.

A profound search for research articles was conducted in multiple data bases. The search was limited to Finnish and English language and as the full text sources only. The search outcome was restricted with restriction of the publish date from 2003 to present day. From the found data, sources and references were followed to further researches and articles.

6.2 Data collection and selection

The data collection was done from scientific article –databases, from CINAHL, Aleksis and Melinda with the keywords nutrition and pregnancy as search words. The found material was limited by search words prenatal and adult. As many of the results were about abnormal pregnancies, words diabetes and chronic were used to exclude those articles. From the articles found, other sources were also found from the source lists and references.

6.2.1 Selecting a review topic

The first step in the thesis data collection method was choosing the thesis topic. This was chosen by the authors' interests. After the topic was chosen, inclusion and exclusion criteria were collected and this way the keywords pregnancy and nutrition were found.

The topic of the thesis was chosen because of the authors' interest in to pregnancy and its content. Pregnant women often have a desire to change their diet during the early pregnancy to better the health of the growing fetus. The topic is important for the prenatal health care, because there the most information is given to pregnant women about pregnancy.

6.2.2 Inclusion and exclusion criteria

To achieve the wanted result and to limit the results to wanted size, the search outcome was restricted by choosing inclusion and exclusion criteria that would guide the found articles to the right area of knowledge. Restrictions were also used to bring out data that was usable. This is why the data search was restricted by choosing only full text articles, published literature and the articles had to be peer-reviewed. The time of publishing was restricted to maximum ten years old articles, published at earliest in the year 2003. These selections are explained in the table 1.

Inclusion	exclusion
Language: Finnish and English	Other language
Normal pregnancy	Pregnancy with problems
Published literature	Unpublished literature
Free literature	Articles with only abstract available
Published in year 2003 or later	Published before the year 2003
Peer reviewed article	Non-peer reviewed article
Scientific research article	

Table 1. The inclusion and exclusion criteria used in the data search of the thesis

6.2.3 Keywords

The keywords chosen for the article were those that defined the wanted area of knowledge. These words, pregnancy and nutrition, were used in the data search and they were the basis of the thesis area. In some databases the results were too large to be processed.

Pregnancy is the period when the fetus is in the woman's uterus growing and developing. It starts from the fertilization and ends to the childbirth. It lasts around 280 days that is 40 weeks counting from the last period (Tiitinen 2013). Another keyword was

Nutrition is defined as the food eaten, that should include all the needs of the body for normal function and sustaining life and health. (WHO 26.1.2014).

Prenatal indicates the time before birth, during the pregnancy time. (Oxford Dictionaries, 9.12.2014)

Young adult, the ages of 18 to 39 were chosen according to the Erikson's theory of stages of psychosocial development (Erikson 1994).

Self-care is taking care of oneself without the help of others. (Oxford Dictionaries, 9.12.2014)

Support is giving assistance, approval, comfort or encouragement, and be actively interested and concerned for the success of someone. (Oxford Dictionaries, 15.9.2014)

Other databases were in Finnish language, in them, the search words were the same but in Finnish. There words were raskaus, ruokavalio and diabetes.

6.2.4 Searching the literature

The data search was done by using the computers at Seinäjoen ammattikorkeakoulu and from databases CINAHL, Aleksis and Melinda by using the keywords nutrition and pregnancy. The material found was then limited by the words prenatal and adult. After this, words diabetes and chronic were used in the exclusion to prevent too large amount of results.

6.2.5 Search results

After the search was done, the found data was gone through to find relevant information. The first phase was to read the headlines, and eliminate the irrelevant data. Next the abstracts of the articles were read and more irrelevant articles were eliminated. After this four articles were printed out and read thoroughly.

The articles were then read through multiple times, at the same time, highlighting the important information and writing it down to a separate paper. After the information was all collected, the author started to group it in to categories.

The data found included more about the pregnancy time nutrition but the less about the guiding of pregnant women and evaluating the results of it.

Data search from CINAHL

From the CINAHL full text database, the information was searched by the keywords pregnancy and nutrition and with the exclusion of the words diabetes, chronic and weight gain. These search words resulted in 108 articles found. Inclusion of search word prenatal and exclusion of preterm limited the result to 19 articles. After this the results were limited by choosing only full text articles and academic articles. The results were also limited by setting the limitation to the publication years from 2004 to 2014. From these inclusion and exclusion criteria, the search result was found to be 18 articles that were then limited by reading the article headlines and abstracts. From CINAHL, 1 article was found useful and used in the thesis. The process of data search can be seen in the table 2.

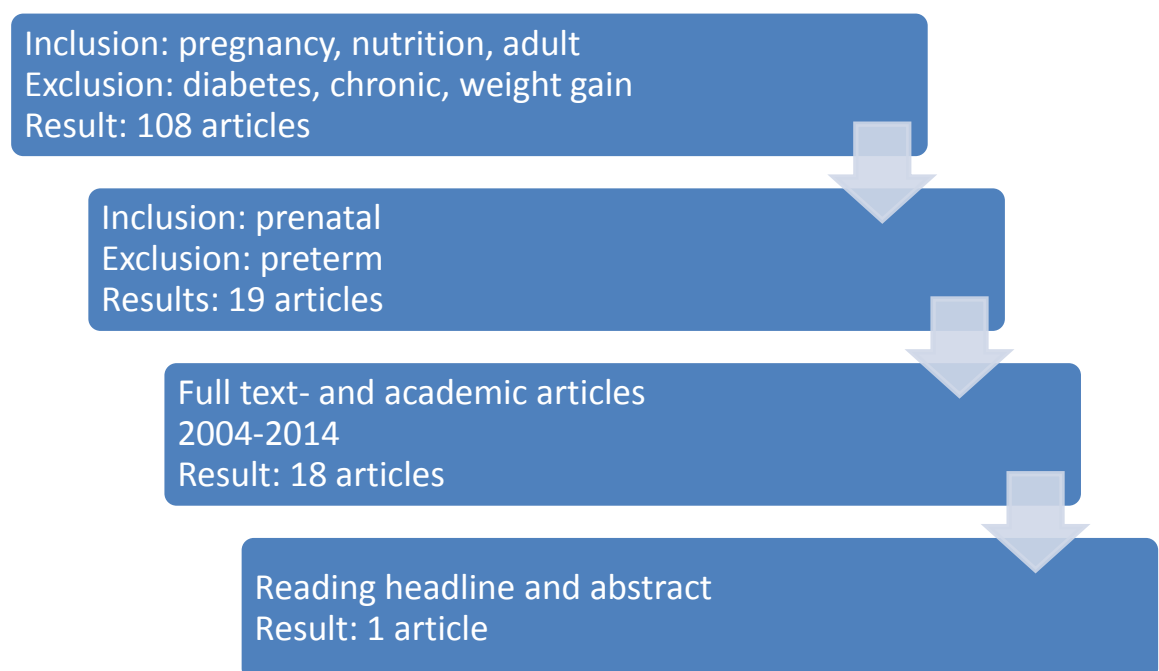


Table 2: Data search from CINAHL

Data search from Aleksi

From the database Aleksi, data was searched in Finnish keywords raskaus, ruokavalio. which were the same as the English, the pregnancy and nutrition. This search resulted in 66 articles. The release date of articles were limited to 2004-2014, which limited the result to 44 articles. Then the word diabetes was used as exclusion, and this limited the results to 33 articles. Some of the articles were also limited by the availability, for they were available for the customers and these articles were excluded from the search results. The headlines and abstract were read and this way the results were limited to 2 articles. The process of data search can be seen in the table 3.

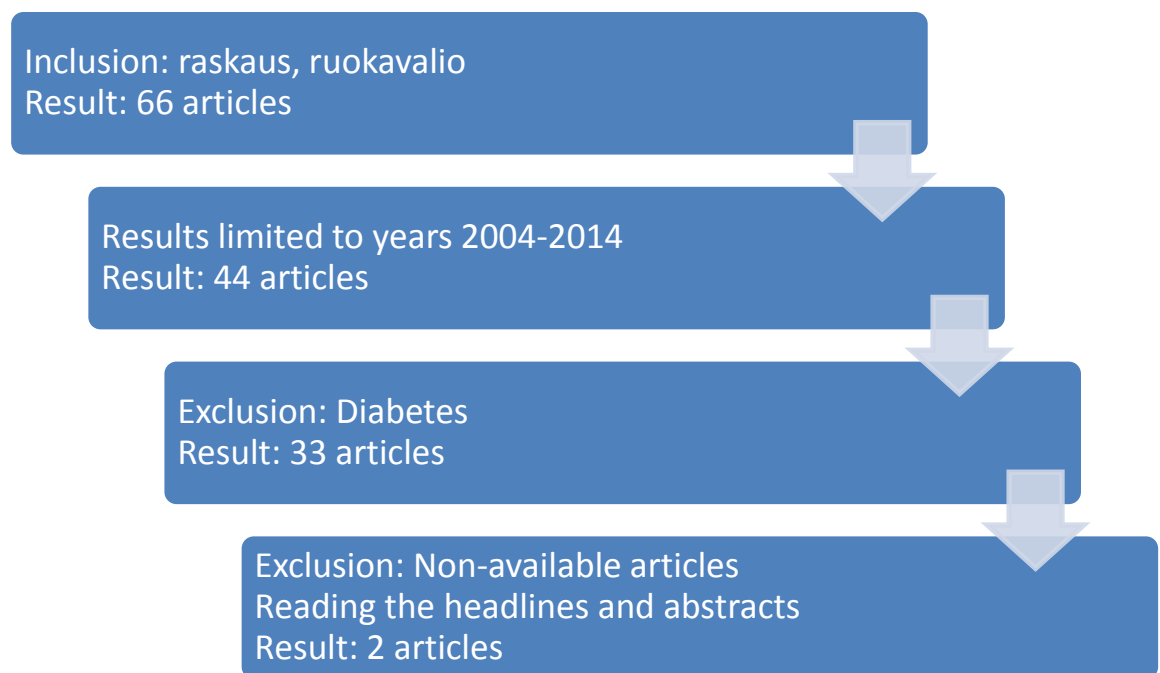


Table 3: Data search from Aleksi

Data search from Melinda

The Finnish database Melinda was used also with the Finnish keywords raskaus, ruokavalio and diabetes, which were the same as in the English keywords pregnancy and nutrition and excluding the diabetes. In the search the inclusion of raskaus and ruokavalio resulted in 11 articles, exclusion of diabetes resulted in 9 articles. The publishing time was also limited to years 2003 to 2014 that limited the

result in 8 articles. Then the thesis-results were also excluded that lead to 3 articles in the search results. Reading the headlines and abstracts limited the result to 1 article to be used in the thesis. The process of data search from Melinda can be seen in the table 4.

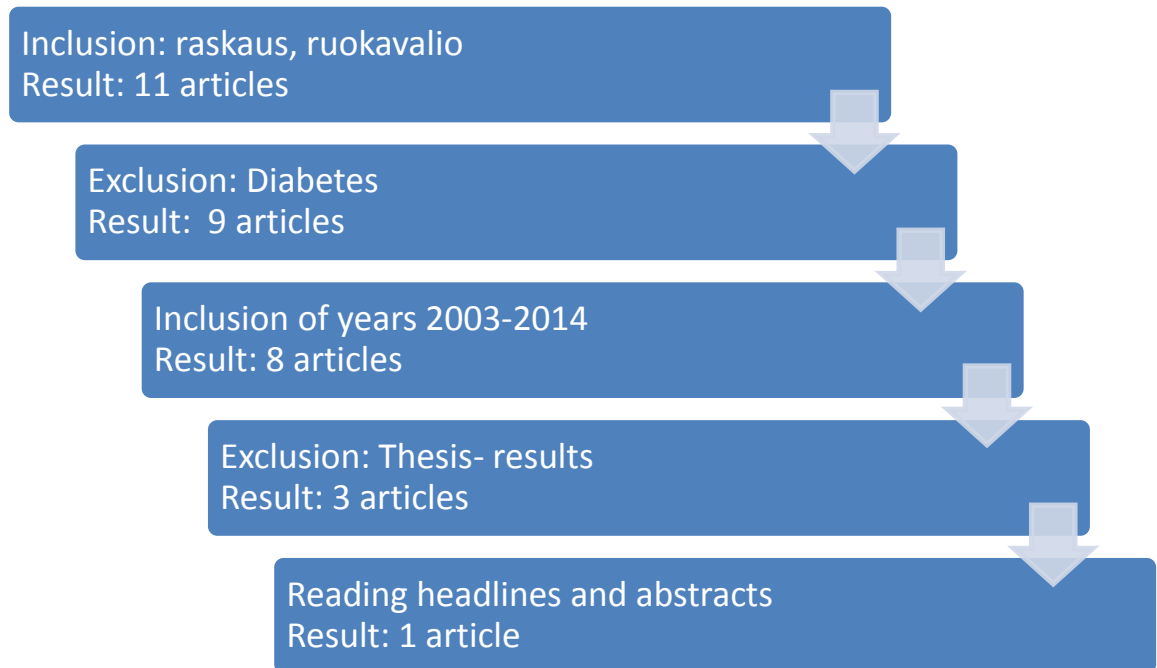


Table 4: Data search from Melinda

6.3 Content analysis and data analysis process

Content analysis can be used both with qualitative and quantitative data. The content analysis is a three phrase process and it is started from the preparation of the data and the details to be analyzed. The next step in content analysis is the reading of the data and making sense of it. The last phase is reporting the found information. (Elo & Kyngäs 2008.)

According to Cronin et al (2008) the first stage is important in finding the relevant information and the central articles needed in the creation of the database for analysis. The next phase is reading the data again and making sense of it by reading the literature multiple times and taking a more systematic and critical perspective in the next reading times. While reading the literature, the research

question should be kept in mind and the literature should be gone through while at the same time trying to answer the questions.

When the information is gone through, the analyzer should be able to understand the read material and to group it to categories according to how the review will be structured. This should be clear and consistent to make sure the reader will understand the results correctly. (Cronin et al 2008.)

In this thesis, the author first read the four articles found from the original data search thoroughly multiple times. At the same time as reading them through, the author highlighted and wrote down the important information found in the articles. Also one new, similar article was found from the sources and references of the original articles and the same process was done to it by reading it multiple times and highlighting the important information.

The information of the written down notes was then collected to paper and divided by the subject field and to categories. The categories were organized and brought together to make a sensible entirety inside the category. During the processing of the found data, the generic- and subcategories were found. These can be seen in the table 5.

SUBCATEGORY	GENERIC CATEGORY	MAIN CATEGORY
Needed nutrients	Nutrition- counselling	Supporting self-care in nutrition during pregnancy
Dangerous nutrients		
restrected nutrients		
practice of learned information	Supporting self-care	
the guiding of pregnant women		
giving information		

Table 5: An example of analysis process of this thesis

7 RESULTS

7.1 Dietary need during pregnancy

The nutritional needs are almost the same as with normal nutrition during the time when not pregnant. This should be versatile and should fulfill the needs of the mother and the growing fetus. Only a moderate rise of energy is needed in the expecting mothers' diet and there is increased need for vitamins and minerals. The need for nutrition should be supplied by eating more frequently and by adding foods with less energy and more protective nutrients. (Pouta 2013.)

The mother should consider the latest recommendations when planning the nutrition and also remember to make the plan individualized according to her own needs and special diet. (Päivänsara 2013.) The plan should also consider the starting weight and previous changes and the woman's individual structure (Pouta et al 2013).

The most important time receiving the proper nutrition for the development of the fetus is during the early pregnancy, during the cell division. This is the time when changes in the cell development become permanent and affect the normal growth and development of the fetus. Deficiencies in the nutrition later on the pregnancy, when the cells are mainly just enlarging can be on the other hand reversed with normal nutrition. (Davidson et al 2012.)

The receiving of nutrition regularly during the day is an important matter and the nutrition should be nutritionally efficient and individualized to the need of the mother. The energy input does not change drastically during pregnancy; the mother only needs to raise her intake only around 150 kcal per day. On the other hand, the eating should be more frequent and instead of energy, include more protective nutrients. (Pouta et al 2013.)

Carbohydrates, fats and proteins are the main energy source in nutrition. Carbohydrates are divided to necessary and unnecessary carbohydrates. Glucose and white flour are not important and are not recommended, but on the other hand vegetables, berries and fruits hold many useful nutrients and are recommended.

Carbohydrates are also found in the grain products, which are also important source of fiber that is important for the function of digestion or cholesterol levels in the blood. (Päivänsara 2013.)

Fats are extremely important during pregnancy and this can be seen in the total absorption of fats. They are important for the development of the fetuses' nervous system, vision, hormonal function and immunity. The fats often also hold important fat-soluble vitamins that are important to the development. (Davidson et al 2012.) The fats can be divided to hard fats' that can be found in meat and milk products and unsaturated, soft fat acids that can be found in vegetables and fish products. The polyunsaturated fats are important in the development of the nervous system and vision and immunity of fetus. (Päivänsara 2013.)

About half of the proteins should be received from the nutrition, for the body itself can't produce them (Päivänsara 2013). The protein demand doesn't increase much during the pregnancy, estimated by Davidson et al (2012) to about 60g per day. Both Päivänsara (2013) and Davidson et al emphasize that the daily amount of protein should be received from small portions throughout the day. Any extra protein received from diet is stored as fat to the body (Päivänsara 2013).

Fluid intake is important for upholding the sodium- potassium- and acid balance. The fluids received are also important for the importing the nutrients and substances to cells and away from body. Normally the body loses around 2 to 3 liters per day and this amount should be replaced in normal eating and drinking. Sometimes the need for fluid increases because of pregnancy and is important to be replaced to prevent constipation caused by deficiency of fluids. (Päivänsara 2013.)

Vitamins and minerals play an important role in the functions of the body and all 13 of these have their own individualized task in the human body. Some of the vitamins, such as iron, vitamin D and folate are often highlighted in the prenatal nutrition as they play an important role in the development of the fetus. Many people, who are concerned about the sufficiency of vitamins in their diet, take supplements in vain. This overdosing of some vitamins might actually lead to

problems with absorption and use of other vitamins. An example is the excessive use of vitamin C may lead to blocking to use of vitamin B12. (Davidson et al 2012.)

The vitamins are divided to water- and fat-soluble groups that differ in the way they are leaving the body. Fat-soluble vitamins stay in the body for a long time whereas the water-soluble vitamins are leaving the body in normal metabolism and need to be replaced daily. (Päiväsara 2013.)

Dietary minerals are inorganic compounds received from nature, such as calcium, copper, zinc, iodine, selenium, magnesium and sodium. These minerals are all essential for nutrition and they uphold the normal functions of the metabolism. (Päiväsara 2013.)

7.2 Harmful ingredients for growing fetus

Some ingredients can also be found to be bad for the development of the fetus. Vitamin A, alcohol and some toxins received from nutrition such as mercury, can cause deformation of the fetus and increase the risk for miscarriage. (Hasunen et al 2004.) Vitamin A is usually needed in everyday metabolism, but it is storage in the body and this way no additional vitamin A is needed to be received during pregnancy (Davidson et al 2012). Exposure to alcohol during pregnancy can lead to serious complications to the fetus, such as fetal alcohol syndrome or its other subcategories (Hasunen et al 2004).

Substances such as salts and caffeine can affect the health of the mother in many ways, and the health of the mother is often seen comparable to the health of the fetus. (Hasunen et al 2004.) Caffeine for example has the tendency to prevent the absorption of vitamins and should be avoided to prevent deficiency of vitamins in the body (Päiväsara 2013). Salts may cause the mother to have rising blood pressure and burden to the kidneys, which will result in the deterioration of the mothers' health, and this way the fetuses' health also (Hasunen et al 2004).

Foods contain additives such as artificial sweeteners that may be risky for the growing fetus. This is why some of them have a recommendation for limitation of daily intake. Liquorice and salty liquorice are also in the not recommended list as

they have been connected to deterioration of mothers health and risk for preterm labor. (Hasunen et al 2004.) Some foods might also have toxins from the environment and the intake of these should be kept an eye on to prevent injurious effects on the fetus (Päivänsara 2013).

7.3 Supporting self-care of pregnant women through guidance

Pregnant women see the nutrition during pregnancy as an important factor of health and many of them believe it to be an important part in the prenatal care. Mothers often change their diet in early pregnancy towards a healthier and a more supporting diet for the growth of the fetus. The pregnant women wish to have the support from health professionals in the pre-natal care and wish that the prenatal guidance concentrates on individual ways to better their diet (Palombarini et al 2014.) The women who need most counselling in nutrition are the vulnerable and socially excluded as well those who as come from poorer conditions (Wilkinson & Walker 2007; Palombarini 2014).

In the first counselling session the mothers' current diet should be discussed and positive feedback given. Also negotiating about the changes to be done is done during the first session. (Pouta et al 2013.) In the counselling situation the nurse should focus on the individual goals of the mother that have been found in a cooperative discussion at the beginning of the nurse-patient-relationship. The goals set in the co-operation of the nurse and mother should then be used to create a common strategy which the mother can use in upholding the new and better nutrition. (Palombarini et al 2014.)

The learning situation is at its best when it's not in the form of a lecture but more of a comfortable discussion, questioning, listening and positive feedback. The teaching and information should be individualized to the mothers' situation in life, as well as their attitude and willingness to change their nutritional habits. The counselling should be divided to multiple sessions and should go through the information piece by piece to ensure proper and long lasting learning. (Pouta et al 2013.) To ensure the best learning experience the information should be given in many different forms, seen from scientific and practical point of view and always

rationalized to the mother to ensure the acceptance and understanding of information (Palombarini et al 2014). The counselling situations should be include discussion, questioning, listening and giving positive feedback. The women wish that the nutritional education would be constructed individually, concentrating on the mother and her cultural background. The information given should be informative and understandable and the amount of information given should also be suitable to ensure best possible outcome. (Pouta et al 2013.)

Sometimes the information given to mothers may be against their social, emotional, cultural or religious believes. In these situations, the information given to mothers may not achieve the wanted outcome as the mothers previous knowledge might not change because the new information can either overlap, clash or agree with the mothers cultural believes. The use of knowledge received form nurses can also be affected by barriers in the mother's life, such as attitude and financial difficulties. The best way to ensure the learning of the mother is to plan the situations to be flexible as possible that take into account any possible setbacks caused by the mothers disagreements or negative reactions. (Palombarini et al 2014.)

It's important for the nurse taking care of the mother to remember that the counselling should be individualized to the mothers needs and learning possibilities. Taking time to teach the proper nutrition can lead to the good nutrition also in the future. (Pouta et al 2013.)

The mothers feel that the will to change will not always be enough, but they should have discipline and willpower to be able to change. This is why the multiple meeting and follow ups are important to make sure the mother keeps motivated. (Palombarini et al 2014.)

Supporting the mother in any case is important part in the pre-natal care as the mother will need the continuous support and encouragement during the prenatal time and in changing her lifestyle to more healthy. Continuous follow ups are important for the future mothers as they might need the support and new information at some point. (Palombarini et al 2014.)

8 DISCUSSION

8.1 Reliability and ethical consideration

The thesis was done as a literature review, and no third party participants took part in the thesis process. All the information was received from reliable journals and research articles. The reliability of information was determined by critical thinking.

The need for ethical consideration is not needed as the thesis doesn't include any original research, any participants or questionnaires.

8.2 Discussion of results

The subject of nutritional importance was very popular in many articles and the author had some difficulty finding the most important information from the selection. The information received was often divided to different sort of categories that the author thought to be sometimes difficult to commoners who didn't understand about the different nutrition's. The nutritional guidance was found in many articles one of the most important part of prenatal counselling and the author found that the mothers attitude often influenced the research outcome.

Päivänsara (2013) discussed about the energy received from nutrition, how it should include both the mothers and the fetus's energy need. Hasunen et al (2004) highlighted that mothers do not need to raise their energy intake so much and that the need for energy is individual and the best way to ensure sufficient energy sustained is to observe the weight gain during pregnancy. In the authors experience pregnant women are often told, they are eating for two, which on the other had is true, but often gives the women an idea, they need to eat twice the amount of food than previously. The women should rather be emphasized that they should remember also the size of the fetus and not increase the intake too much. Weight gain is a good way to observe the intake on nutrients, but the author feels that even this should not be taken too seriously as the weight fluctuates even with non-pregnant women and results in no serious consequences.

The nutrients needed are in the thesis and its sources listed by their name and with the amount of recommended quantity such as 60g per day. This is good for professionals, but not many women understand about the different nutrients and in what quantities they can be found in different foods. On the whole, the author sees that the guiding of proper diet might become problematic if the pregnant women do not know enough about the nutrients and the content of foods.

Creating an individualized guide to women might become a problem or at least big assignment for the nurse if the woman doesn't know anything about the proper nutrition or how to implement it. Sometimes, a ready menu would be easier, but creating one that is suitable for the individual plan and versatile would be a big task for the nurse and mother.

For the nurses' work in creating an individualized plan for every pregnant woman might become a burden with the amount of customers they have in the prenatal clinics daily. Some kind of foundation for the plan would be good to ease the nurses' work in creating the plan as well as discussing the correct issues with the mother in the prenatal meetings.

8.3 Further suggestions

Future researches should emphasize more on the form of the information given to mothers and the efficiency of different manners of classifying the information about the nutrition.

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