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SUPERVISION OF PATIENTS WITH HYPOTHYROIDISM SYMPTOMS

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KILPIRAUHASEN VAJAATOIMINTAA SAIRASTAVAN POTILAAN OHJAUS

- Elämäntapaohjausta kilpirauhasen vajaatoimintaa sairastavalle

Tämän tutkimuksen tavoitteena on selvittää minkälaisia oireita kilpirauhasen vajaatoimintaa sairastavat potilaat kokee, sekä löytää tapoja lievittää kilpirauhasen vajaatoiminnan oireita ruokavalion ja elintapojen muutoksilla. Tutkimuksessa pohditaan myös kuinka sairaanhoitaja pystyy potilasta näissä elämäntapamuutoksissa ohjaamaan. Opinnäytetyössäni teen tutkimusta käyttämällä kirjallisuusresursseja löytääkseni tietoa kilpirauhasen vajaatoimintaa sairastavien potilaiden oireista ja liitännäissairauksista sekä kerään tietoa ravintolisistä, elämäntapamuutoksista ja ruokavaliosta, joita suositellaan kilpirauhasen vajaatoimintaa sairastavalle potilaalle.

Kilpirauhasen vajaatoimintaa sairastavilla potilailla ensisijainen hoito on tyroksiinilääkitys. Tyroksiinilääkitys ei kuitenkaan aina poista kaikkia oireita, joten potilaita tulisi ohjata heidän elämäntavoissansa oireiden lievittämiseksi. Ruokavaliosta ja etenkin liikunnan merkityksestä kilpirauhasen vajaatoimintaa sairastaville on löydetty erilaisia tutkimuksia, ja voidaan päätellä, että nämä olisivat tehokkaita keinoja hallita monia sairauden aiheuttamia oireita.

Työ on kirjallisuuskatsaus, jossa on käytetty sekä englannin että suomenkielisiä lähteitä. Tiedot kerätään käyttämällä sähköisiä tietokantoja, kuten Käypähoito, Terveysportti ja CINAHL complete. Myös kirjaston kirjallisuutta käytetään. Monien eri lähteiden avulla tutkimuksesta tulee laajempi ja osuvampi näkemys. Tutkimuksessa käytettyjä hakusanoja olivat muun muassa: kilpirauhasen vajaatoiminta, kilpirauhasen vajaatoiminnan ruokavalio, ravitsemuksellinen arviointi, hoitotyö.

Opinnäytetyössä tutkittavia kysymyksiä ovat kilpirauhasen vajaatoiminnan vaikutus ihmisiin jokapäiväisessä elämässä, millaisesta lääkityksestä, ravinnosta ja tuesta kilpirauhasen vajaatoiminnasta kärsivät hyötyvät, ja mikä on sairaanhoitajien rooli ohjeiden soveltamisen opastuksessa.

ASIASANAT:

Kilpirauhasen vajaatoiminta, potilasohjaus, elämäntapaohjaus

BACHELOR´S THESIS | ABSTRACT

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SUPERVISION OF PATIENTS WITH HYPOTHYROIDISM SYMPTOMS

- Lifestyle guidance for patients with hypothyroidism

The aim of this study is to determine the symptoms that a patient with hypothyroidism experiences, and to find ways to alleviate the symptoms of hypothyroidism through changes in diet and lifestyle. The study also considers how the nurse can guide the patient in these lifestyle changes. In my thesis, I conduct research using literature resources to find information on the symptoms and comorbidities of patients with hypothyroidism, as well as information on dietary supplements, lifestyle changes, and diets recommended for patients with hypothyroidism.

In patients with hypothyroidism, the primary treatment is thyroxine medication. However, thyroxine medication does not always eliminate all symptoms, so patients should be guided in their lifestyle to alleviate the symptoms. Various studies have been found on diet, and especially on the importance of exercise for people with hypothyroidism, and it can be concluded that these would be effective ways to manage many of the symptoms caused by the disease.

The work is a literature review using both English and Finnish sources. Data used in this work has been collected by using electronic databases such as Käypähoito, Terveysportti and CINAHL complete. Also literature from the library has been used. By using many different sources, the research gets broader and more relevant view. The keywords used in the study included: hypothyroidism, hypothyroidism diet, nutritional evaluation, nursing

The questions to be studied in the thesis are the impact of hypothyroidism on people in everyday life, what kind of medication, nutrition and support benefit those suffering from hypothyroidism, and what is the role of nurses in guiding the application of the guidelines.

KEYWORDS:

hypothyroidism, thyroid insufficency, lifestyle counceling, patient supervision

CONTENT

1 INTRODUCTION

I decided to capture my thesis around the supervision of the patients with hypothyroidism and especially their nutrition and living habits. The reason why I chose this topic is because the disease is quite common in Finland and I've come across people who have got thyroid insufficiency and are struggling with the side effects of Thyroxin medication use. The aim of this study is to find out ways to alleviate the symptoms of hypothyroidism by dietary changes. In my study, I will do a research by using literature resources to find out what kind of diet is recommended to patients suffering from hypothyroidism and possibly create patient instructions which could be uploaded on the internet.

Hypothyroidism is a thyroid disease that causes extensive metabolic disorders in the body. It is a very common illness in Western countries and in Finland approximately 300,000 people (over 4% of the population) use thyroxine medication for thyroid insufficiency. (Kilpirauhasliitto). It is estimated that much more people suffer from thyroid insuffiency but have not yet been diagnosed. Hypothyroidism is four times more common in women than men. Most patients are middle-aged or older, but illness may occur even in younger patients. (Roberts, Landenson, 2004).

In deep hypothyroidism the systemic symptoms include lack of initiative, fatigue, depressive mood, memory problems, slow motor functions and speech, feeling cold, constipation, weight gain and slow heart rate. The skin is dry, rough, cold or pale. Hair may become rough, and there is hair loss. The symptoms may also include muscle weakness, ache and stiffness and among women it might also cause infertility.

Hypothyroidism is a surprisingly common but still not a very well-known illness. The main purpose of this thesis is to study hypothyroidism and how it affects on daily life. Another objective is to find out the effect of diet combined with the thyroxine medication. There have been some studies that have proven that even though diet alone cannot cure hypothyroidism, it has influence on the functioning of the thyroid and the effectiveness of the Thyroxin medication. (Guariso, 2007).

The object of this thesis is to educate patients on how they can affect their symptoms caused by hypothyroidism, such as fatigue and weight gain, by their own lifestyle changes.

2 BACKGROUND

2.1 Thyroid gland

The thyroid gland is located in the neck below larynx. It is a butterfly shaped organ that weights about 20g. Despite its small size it is a vital function that affects the whole body. It affects, among other things, metabolism, body temperature regulation, general alertness and mood. The task of the thyroid gland is to prepare, store and release thyroid hormones into the bloodstream. The most important of these are thyroxine (T4) and triiodothyronine (T3). Healthy thyroid produces these hormones in a ratio of 4: 1 so about 80% of the T4 hormone and 20% of the T3 hormone. Thyroxine (T4) is the primary hormone produced by the thyroid gland. After delivery via the bloodstream to the body's tissues, a small portion of the T4 released from the thyroid gland is converted into triiodothyronine (T3), which is the most active hormone. (Kilpirauhasliitto).

The function of the thyroid gland is regulated by a feedback mechanism involving the brain. When thyroid hormone levels are low, the hypothalamus in the brain produces a hormone known as thyrotropin releasing hormone (TRH) that causes the pituitary gland to release thyroid stimulating hormone (TSH). TSH stimulates the thyroid gland to release more T4. (Stöppler, 2017).

Lack of thyroid hormone slows down your metabolism, which results in fatigue, constipation, freezing, weight gain, dry skin and slow heart rate. Swelling of the face and extremities is also common. Symptoms begin slowly and worsen during the years. Severe hypothyroidism is also related to depression and memory impairment.

2.2 Aetiology of hypothyroidism

There are several types of hypothyroidism. Worldwide, the most common cause of congenital hypothyroidism remains endemic iodine deficiency. (Delange & al., 2001). In regions with sufficient dietary iodine, congenital hypothyroidism occurs in 1 of 4000 live-births in regions of sufficient dietary iodine; the condition is twice as common in female infants and is a sporadic disorder in 85% of cases. (LaFranchi, 1999).

The most common cause of acquired hypothyroidism is autoimmune thyroiditis (also known as Hashimoto's disease), which is seven-fold more common in women with increasing incidence during middle life. (Dayan, Daniels, 1996). The risk is steadily increasing with age, especially in women. Researchers speculate that the cause is related to estrogen activity. According to some research data, the effect of estrogen on the immune system may manifest as autoimmune diseases, including thyroid disease. Estrogen is also underlying the fact that thyroid symptoms are quite common in menopause. (Tavi, 2011).

Hashimoto's thyroiditis is an autoimmune disease in which the body's immune system, or natural defense system, attacks its own thyroid gland. This causes a thyroid enlargement or goiter and progressive thyroid destruction. (Ruggeri & al., 2017).

In autoimmune thyroiditis, antibodies to thyroid tissues are found in the blood. They are found in small amounts in 5–10% of healthy Finns, which shows that a mild autoimmune reaction in the thyroid gland is common. This mild reaction has no practical significance.

Approximately 1–4% of Finnish thyroid antibodies are found in higher concentrations. Antibodies alone do not yet mean illness, but then the risk of various thyroid disorders is high. The consequences vary from person to person. Inflammation per se almost never causes thyroid pain or other local symptoms, but over the years, thyroid function can be disrupted.

In most cases, the thyroid gland gradually becomes atrophied over the years, leading to the development of hypothyroidism. Some develop antibodies that accelerate thyroid tissue, leading to hyperthyroidism. Antibody-induced hyperactivity is called Basedow's disease. Sometimes, rarely, autoimmune thyroiditis is more acute, resulting in the thyroid gland enlarging quite rapidly and may feel sore. (Mustajoki, 2021).

Current studies suggest that in developed countries, where adequate nutrition intake is secured, hypothyroidism cannot be prevented. In poor countries where iodine intake is low because of poor nutrition, iodine supplementation may have an effect on the incidence of hypothyroidism since iodine insufficiency has direct connection to thyroid diseases. (Eren, Rehan, 2011).

3 THE PURPOSE AND RESEARCH QUESTION

The purpose of the Thesis is to find how hypothyroidism affects to persons everyday life and what kind of medication, nutrition and support would the persons suffering from hypothyroidism benefit from, and what is the nurse's role in helping the patient to apply their instructions.

Research questions are:

1. What are the effects of hypothyroidism to the persons daily life?

2. What are the means to treat the effects of hypothyroidism?

3. What kind of nutrition and diet the patient suffering from hypothyroidism would benefit from?

4. What kind of support and guidance from nurses the persons suffering from hypo-thyroidism would benefit?

4 RESEARCH METHOD

4.1 Literature review

The research method used in this work will be a literature review. A literature review is a survey of scholarly sources like books, journal articles, and theses, related to a specific topic or research question. (McCombes, 2019). This overview critically reviews and combines all the studies, providing a better answer than the results from just one study. A literature review refers to familiarization with sources related to a particular topic or the documented outcome of such familiarization.

The goal of the literature review is to develop existing theory as well as to build a new theory. It can also be used to evaluate theory. Literature review builds an overall picture of a particular set of issues. It also seeks to identify problems, and provides an opportunity to describe the development of a particular theory in history. (Salminen, 2011).

4.2 Literature search

All research material can be accessed through the internet or library services provided by Turku University of Applied Sciences. The data will be collected by using electronic data-bases such as Käypähoito, Terveysportti and CINAHL complete. Also, Google scholar and literature from the library will be used. By using many different sources there will be more broad and relevant view of the research. The languages of the articles will be lim-ited to English and Finnish. The keywords used for research are: Hypothyroidism, diet for hypothyroidism, nutritional assessment, nursing intervention.

4.3 Inclusion and exclusion criteria

I selected the materials in which the title corresponded with the research question the best. The studies to be included had to be as new as possible, so most of the material to be examined is limited to 10 years of age. Some of the sources are older than 10 years since they included timeless information. The articles and other material used in this research also had to be from reliable sources, so all unreliable sources, or sources that

are not written by a professional, are excluded from the study. The material used for this thesis has been gathered from both Finnish and English sources.

4.4 Literature analysis

The aim of the thesis is to use as much as possible of original researches as well as avoid multi-handed passing information to maintain a high level of reliability. Sources have been pruned to articles and studies that have been published in a low-confidence or unknown publications.

I started my search by writing the keywords in the research database, and first I checked the headline of the article, and if it is matching on what I am searching for. After I found an article that seemed to be suitable for my research, I checked the year of the study. I tried to search as new articles as possible. I also gave a look to older articles depending on the subject, since some information hasn't changed even the research were done longer time ago. After finding suitable topic which had been published in reasonable time frame, I read the abstract of the study and checked if the author is reliable. While reading the article, I evaluated the objectivity of the text, the language and the quantity and quality of the sources that had been used, and picked the facts that I found useful for my study.

5 THE EFFECTS OF HYPOTHYROIDISM TO THE PERSONS DAILY LIFE

Hypothyroidism causes a patient a variety of symptoms and comorbidities. These include diseases of the skin, eyes, mouth and joints, and liver.

5.1 Hypothyroidism and comorbidities

Many people with hypothyroidism also suffer from various intestinal diseases. Diarrhea in hypothyroidism may be due to a slowing of the secretion of digestive enzymes in the gut, which interferes with digestion (Kilpirauhasliitto). Less commonly appreciated and typically associated with severe hypothyroidism are carpal tunnel syndrome, sleep apnea, pituitary hyperplasia that can occur with or without hyperprolactinemia and galactorrhea, and hyponatremia that can occur within several weeks of the onset of profound hypothyroidism. (Garber & al., 2012).

As mentioned below, hypothyroidism can cause, for example, carpal tunnel syndrome (CTS), where the nerve is subjected to compression and symptoms due to swelling, tingling or pain in the rest of the hand and fingers. Hypothyroidism is one of the most important causes of the CTS, which, if diagnosed early can be effectively treated. Excess deposition of glycosaminoglycans, hyaluronic acid and some mucopolyssacharides in subcutaneous tissues causes dermal oedema. In the narrow space of carpal tunnel, deposition of pseudo mucinous substances on the median nerve sheath leads to compression of the nerve and leads to CTS. (Karne & al., 2016).

Hypothyroidism may be associated with the enlarged thyroid (goiter) and other thyroid diseases, as well as autoimmune diseases such as vitamin B12 deficiency, celiac disease, vitiligo, baldness, insulin-treated diabetes and, very rarely, adrenal or ovarian disorders. (Moratalla-Navarro & al., 2021).

Cholesterol levels can rise, which impairs blood vessel function and predisposes to the development of cardiovascular disease. Deterioration in muscle function and muscle damage may be noticeable in the muscles, which can sensitize fatty drugs (statins) to muscle damage. (Duntas & al., 2014).

The therapeutic balance of diabetes can rapidly deteriorate with the development of hypothyroidism. Patients with type 1 diabetes have an increase in prevalence rates of autoimmune thyroid disorders compared with the nondiabetic population, especially among women. (Biondi & al., 2019).

For above mentioned reasons it is important for hypothyroidism patients to check their diet and switch from hard fats to vegetable fats and consume slower carbohydrates, for example by favoring whole grains. It is also important to avoid salty food and to drink enough water to prevent swellness in the body.

5.2 Hypothyroidism during pregnancy

The size of the thyroid gland increases during pregnancy. Thyroid hormone production increases during pregnancy in healthy women, and those with impaired function often have to increase their thyroxine dose. The reference values for thyroid tests in pregnant women differ from those in other women. The pregnancy hormone HCG increases the production of thyroid hormones, for example TSH decreases in the blood, especially in early pregnancy. (Sahay & al., 2012).

Hypothyroidism can cause complications during pregnancy and affect the baby’s intellectual and motor development. In clinical insufficiency, thyroxine treatment has a beneficial effect on the problems.

If clinical hypothyroidism is diagnosed during pregnancy, thyroxine is initiated directly at a maintenance dose of 100 to 150 µg per day. In case of subclinical insufficiency, the starting dose is lower, 25-50 µg per day. TSH and T4V are monitored once a month during the first half of pregnancy and twice thereafter during pregnancy. The fetus' own thyroid gland begins to function around week 20 of pregnancy. T3 products are not recommended while pregnant, so only thyroxine is used to treat insufficiency during pregnancy. (Kilpirauhasliitto).

5.3 Congenital hypothyroidism

Causes of congenital insufficiency are thyroid dysfunction, missing or underdeveloped thyroid tissue. The condition is more common in girls than boys. Other cause for congenital insufficiency is disorder of thyroid hormone production (10%), which may cause

the thyroid gland to enlarge. The incidence of congenital thyroid failure in Finland is about 1: 3500 newborns. The consequences of untreated congenital hypothyroidism are slowed height growth and slowed development of intellectual functions. (Kilpirauhasliitto).

Symptoms of congenital hypothyroidism during the first week of life are mild - some children show maternal prematurity, delayed skeletal development, jaundice, large tongue, abdominal bloating, large head circumference, muscle slackness, skin marbling, or no symptoms. Therefore, since 1979, every newborn's thyroid function has been screened in Finland by determining TSH in the umbilical cord blood, which accelerates the thyroid gland to produce thyroxine. If the TSH of the umbilical cord blood is low, failure is ruled out. If the umbilical cord blood TSH is in the borderline range, serum free thyroxine S-T4V is also determined at 3 days of age. When high TSH is detected, confirmatory samples are taken at 3 days of age and treatment with thyroid hormone (Thyroxin) is started. If confirmation samples taken before initiation are normal, treatment should be discontinued. If confirmatory specimens confirm the impairment, treatment is continued and diagnosis is confirmed at the age of two years with a treatment break. The goal of screening and early thyroxine replacement therapy is to prevent intellectual damage caused by failure. (Kilpirauhasliitto).

Treatment follow-up visits take place after 2 and 4 weeks and then every 3 months until 2 years of age. At the age of 2-5 years, you visit every six months, from 5 years to the beginning of adolescence once a year, in adolescence you visit every six months, at the end of the growing age once a year. The visits monitor height growth, the child’s psychomotor development, and laboratory monitoring determines T4V and TSH. Bone age is determined once a year. The appropriate dose of thyroxine is evaluated based on weight and laboratory results. (Kilpirauhasliitto).

6 THE MEANS TO TREAT THE EFFECTS OF HYPOTHYROIDISM

Combined to medication, adequate sleep, minimization of stressors, varied nutrition, and moderate and regular exercise are recommended for a person suffering from symptoms of hypothyroidism.

Hypothyroidism is mainly treated with levothyroxine. Levothyroxine is a precursor of thyroid hormone. Hormones secreted by the thyroid gland are important in regulating growth and development, metabolic body temperature, and blood circulation. A healthy thyroid gland produces about 70 to 90 micrograms of thyroxine per day. Among other things, thyroxine given in connection with hormone deficiency accelerates the metabolism of the base and increases heat production. The treatment of dysfunction is hormone replacement therapy. Treatment is a thyroxine medication that compensates for the low production of hormone by the thyroid gland. (Salmela & al., 2016).

The starting and maintenance dose of thyroxine is individual. Generally, the starting dose is lower than the maintenance dose and the medication is gradually increased until a suitable maintenance dose is found. Once the dosage has been reached at a level of well-being, the patient is asymptomatic and the results of thyroid tests are normal, thyroid control tests are taken once a year. It is common for medication to aim for a TSH of 1-2, but individual differences must be considered when listening to the patient's condition. Treatment is guided primarily by patient symptoms and secondarily by laboratory values. (Kilpirauhasliitto).

Another manufactured thyroid hormone used to treat hypothyroidism is called liothyronine (LT3). Sometimes LT4 treatment isn’t enough and it is needed to use combination therapy of both LT3 and LT4 hormones. (Mateo. et al 2019)

The most common side effects of hypothyroidism are fatigue, overweight, and depression. There is evidence that exercise would be an effective way to treat these side effects, as it significantly affects alertness, mood, and reduces overweight. Exercise has dozens of beneficial effects on bodily functions. It improves impaired sugar metabolism, strengthens bones, facilitates stress management, lowers high blood pressure and high cholesterol, and reduces overweight. It prevents cardiovascular disease, type 2 diabetes and musculoskeletal disorders.

Regular exercise has beneficial effects on mental health and mental well-being. Lack of exercise is associated with poor sleep quality and daytime fatigue. Physically active people manage stress better than those who exercise a little. Exercise improves mood and fights depression.

Exercise, nutrition and obesity are intertwined in many ways. It has been said that exercise is part of nutrition and nutrition is part of exercise. Being overweight is most effective when you exercise more and eat less. (Huttunen, 2018).

The recommended amount of exercise is about half an hour of moderately strenuous exercise 5-7 days a week, or strenuous exercise 20-60 minutes three times a week. Daily exercise can be put together into smaller pieces, as three times 10 minutes a day seems to produce the same health benefits as once 30 minutes. The greatest possible health effect is achieved with quite moderate exercise.

Also getting enough of sleep is important - it is recommended for adult to have 7-9 hours of sleep each night. (Hirshkowitz & al., 2015).

Sleep restores the body from stress and fatigue and balances the nervous system. It strengthens immune system by activating the mechanisms of disease and inflammation in the body. It also affects other regulatory systems in the body, such as hormones. (Suomen mielenterveys ry).

7 NUTRITION AND DIET THE PATIENT SUFFERING FROM HYPOTHYROIDISM WOULD BENEFIT FROM

According to Duodecim medication interaction database, supplements such as antiacids containing magnesium or aluminum, iron, multivitamins containing iron, or calcium might have interactions with thyroid medications. They should be taken several hours before or after your thyroid medication to avoid an interaction. (Terveysportti).

Iodine

Iodine is an essential nutrient for thyroid function that maintains the growth and development of the body. Iodine is part of the thyroid hormones, thyroxine and triiodothyronine. These hormones are especially needed for the normal growth and development of the central nervous system. In adults, iodine deficiency causes thyroid enlargement and goiter. In children, iodine deficiency during fetal or early childhood causes growth disorders and, in some cases, even mental retardation. Inadequate intake of iodine remains one of the most significant nutritional deficiencies worldwide. (Ruokavirasto).

The thyroid gland needs iodine to produce thyroid hormones. The recommended daily intake of iodine is 150 µg in adults, 175 µg in pregnant women and 200 µg in breastfeeding women. These recommended limits should not be exceeded by taking an iodine supplement without discussing it with your doctor. (Kilpirauhasliitto).

Selenium

Selenium is an antioxidant that converts hydrogen peroxide and other oxygen compounds such as fatty acid peroxides and free hydroperoxides to a harmless form in the cell. Studies have shown that supplementing with 200 mcg of selenium per day may help decrease thyroid antibodies and improve mood in people with Hashimoto's. (Toulis & al., 2010).

Zinc

Zinc is an essential trace element we get from food. Most of the zinc in the body is located in the muscles and bones. One of the most important function on zinc is to promote tissue regeneration and growth. Zinc is also important in regulating gene function.

Zinc deficiency slows the release of thyroxine from the thyroid into the bloodstream. A study showed, that there is some evidence of an effect of zinc alone or in combination with selenium on functioning of thyroid on overweight female hypothyroid patient. (Mahmoodianfard & al., 2015).

Vitamin D

The results of a research indicated that hypothyroidism patients with or without an immune base, deal with vitamin D deficiency more than healthy people. In the study of (Evliyaoğlu & al., 2015), the patients with < 20 ng/mL vitamin D level was considered as vitamin D deficient and they showed that the prevalence of vitamin D deficiency is more common in people with Hashimoto's disease than in healthy people.

Vitamin D deficiency may have direct associations with thyroid gland function and indirectly may affect thyroid by modulating immune system. However, further studies are needed to identify the exact molecular mechanism of this hypothesis in non-immune hypothyroidism. Also, screening for vitamin D deficiency may be helpful in all hypothyroid patients. (Ahi & al., 2020).

Vitamin B

B vitamins are water-soluble vitamins that are involved in the body's metabolism of nutrients. There is a high (approx. 40%) prevalence of B12 deficiency in hypothyroid patients. Traditional symptoms are not a good guide to determining presence of B12 deficiency. Screening for vitamin B12 levels should be undertaken in all hypothyroid patients, irrespective of their thyroid antibody status. Replacement of B12 leads to improvement in symptoms, although a placebo effect cannot be excluded, as a number of patients without B12 deficiency also appeared to respond to B12, administration. (Jabbar & al., 2008).

B12 (cobalabim) is a B vitamin necessary for the functioning of the nervous system and brain. It affects, among other things, the formation of DNA, or hereditary factors, and thus also the formation of red blood cells. It is a water-soluble vitamin that is stored in the liver. Most water-soluble vitamins are not stored in the body, but vitamin B12 is an exception. Vitamin B12 is obtained from animal products, which is why vegetarians and vegans often suffer from deficiency. Other groups vulnerable to vitamin B12 deficiency include the elderly, pregnant women and people with malabsorption. (Obeid & al., 2019).

B12 deficiency can cause anemia and nervous system symptoms such as tingling, numbness, and numbness in the hands and feet. Distraction and memory problems are also possible symptoms of deficiency.

Diet

Patients with hypothyroidism should follow a heart-friendly diet, that includes plenty of vegetables, fruits, berries, fish, whole grains, seeds, nuts and vegetable oils. Restricting salt intake and drinking enough water is also important when it comes to reducing swellness. It also helps with carpal tunnel syndrome, which is one of the comorbidities of hypothyroidism. (Terveyskylä).

To avoid weight gain, it is important to eat small portions many times a day. When preparing the portion, it is advisable to follow the plate pattern: half plate of vegetables, a quarter of protein and a quarter of carbohydrates, preferably whole grains.

Hypothyroidism can slow down bowel function and cause constipation. In this case, it is good to add extra fiber to the diet in the form of whole grains and pay attention to adequate water intake, which helps with abdominal function. (Männikkö, 2020).

Some people have also found alleviation to their hypothyroidism symptoms by gluten free diet, but it has not yet been scientifically proved to have a direct connection in the functioning of the thyroid.

From these results, it can be concluded that although diet, and especially various vitamins supplements, do not have a healing effect on hypothyroidism, it could be beneficial for a patient with hypothyroidism to give it a try.

8 SUPPORT AND GUIDANCE FROM NURSES THE PERSONS SUFFERING FROM HYPOTHYROIDISM WOULD BENEFIT

8.1 Nutritional therapy

Nutrition therapy is individual, personal nutrition coaching according to the client's state of health. It is a treatment of a medical condition through changes in diet by adjusting the amount and quality of nutrient intake. Nutrition therapy is an integral part of patient care and it is practiced by nutritional therapists. Nutrition guidance can be given by a qualified doctor or nurse. Nutritional therapy gives an opportunity to maintain health with minimal amount of pharmaceutical products.

Nutritional treatment refers to the promotion of health and well-being as well as the treatment of diseases through nutrition by any means. High-quality nutritional treatment is timely, adequately quantified and individually implemented. It succeeds as a multi-professional collaboration with consistent goals, nutritional management practices, and adequate human resources. Proper nutrition has been found to maintain an individual’s health, well-being and ability to function. (Ravitsemusterapeuttien yhdistys).

8.2 Supervision and guidance of the patient

A patient with hypothyroidism needs regular check-ups and blood tests due to thyroxin medication. It isn’t enough that the lab results are within reference values, but the patients symptoms also need to be monitored. The dosing should be measured carefully since over a long period of time, excessive intake of thyroxine increases the risk of arrythmias and osteoporosis. (Ko & al., 2014).

It is essential that the patient receives the right treatment for the illness he or she has been diagnosed with and that the treatment is properly and sufficiently closely monitored. When starting medication, it is important to monitor regularly how it affects the patient's well-being and blood levels. (Valvira).

8.3 Nurse's role in patient's supervision

A patient with hypothyroidism should have organic, nutritious and varied diet. Also exercising is in huge role when it comes to managing weight and fatigue, since those are common symptoms of hypothyroidism. Nurse's role is to provide knowledge of a healthy diet, guidance and support for the patients. Hypothyroidism might also cause depression, which is often result of other symptoms, such as fatigue, so it may also have negative effect in patients social life and emotional wellbeing, so the patient might also need emotional support. In case nurse's support isn't enough, the nurse is also able to refer the patient to a mental health professional if needed.

The nurses do not always have enough resources to plan healthy diets, in which case the nurse should provide the patient with the means to become acquainted with them. The nurse can give the patient advice, and guide them to familiarize with Terveyskylä e-health services on the internet. Terveyskylä is a website featuring 32 virtual houses built around different themes. The houses provide information and support to all citizens and patients free of charge. In addition, the range of services includes various chats, chat bots and symptom navigators. (Terveyskylä). It is already being used by many health care professionals to guide their patients. Terveyskylä provides e.g., information of heart-friendly diet that is recommended to patients with hypothyroidism. Alternatively, the nurse may refer patients to a nutritionist.

9 ETHICS AND VALIDITY

The research will be a literature review so there will be no interviews that could harm anyone's privacy. I will only be using articles that has valid information written by reliable authors, and I will collect and mark all the references that I will use in this study.

In my thesis I have used both Finnish and international sources. International sources offer the opportunity for more extensive research material, but it is also important to remember that the differences between society, culture, and health care may affect the research findings, and those might not apply in Finland. However, I have tried to make sure the studies contain general information that can be considered qualified internationally. On the other hand, the inclusion of international material is also a strength since hypothyroidism is a worldwide disease.

In qualitative research, it is essential to assess the credibility and reliability of research. The validity and reliability of a study can be assessed in a qualitative study using the concepts of reliability and validity. Reliability refers to the consistency of the analysis and the reproducibility of the measurement results. (Hammarberg & al., 2016).

The text produced is based on proven material and has been written with own words. The authors' opinions, beliefs and previous information have not affected the literature review or the final output but are all based on the information. (Tutkimuseettinen tiedekunta 2012). All the sources that I used are marked in the text with the guidelines created by Turku University of Applied Sciences and a list of references has been created at the end of the thesis.

The reliability of my thesis may be diminished by the fact that the work has been done individually and in quite short period of time.

10 CONCLUSIONS AND DISCUSSION

In patients with hypothyroidism, the primary treatment is thyroxine medication. However, thyroxine medication does not always eliminate all symptoms, so patients should be guided with their living habits to alleviate their symptoms. Various studies have been found on diet and the importance of exercise for a person with hypothyroidism, and it can be concluded that they would be effective means to control the symptoms.

Nurses' role is to provide knowledge of a healthy diet, guidance and support for the patients. Nurses should offer the patient the tools they need on their lifestyle changes, and if needed, refer the patient to other health care professional, e.g., a nutritionist.

A patient with hypothyroidism is recommended to have a varied diet that includes plenty of vegetables. However, not all the necessary vitamins are always obtained adequately through the food products, in which case it would be a good to also add various vitamin supplements in their diet to ensure an adequate daily intake of vitamins to promote thyroid function. Recently, it has been also observed that the iodine intake of Finns has slightly decreased. One reason for it is suspected to be the switch to iodine-free special salts.

The importance of exercise is also emphasized in hypothyroidism, as in many other diseases. Exercise produces hormones called endorphins, which are present in the central nervous system and are causing a feeling of pleasure and also reduces pain. It has been proven that exercise isn't only good for the body, but also for the mind. It helps coping with stress and also improves your mind. Exercise also prevents overweight, which is common in patients with hypothyroidism due to slow metabolism. Exercise is also known to improve sleep quality, and thus relieve the symptoms of exhaustion.

In summary, the studies show that diet and exercise clearly have an impact on the well-being of a thyroid patient, and it would be good for nurses to discuss lifestyle changes when meeting a patient suffering from hypothyroidism. There was fairly good amount of information on the subject, but more research should be done since thyroid dysfunction affects a fairly large part of the population.

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