

**SUPPORTING THE ADHERANCE TO NON-  
PHARMACHOLOGICAL TREATMENT OF  
HYPERTENSION.**

A motivational brochure for clients at Welfare Station in Kemi.

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Thesis

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The commissioner of this thesis, Lapland University of Applied Sciences, Welfare Station requested a brochure about hypertension for patient education. The purpose of this thesis was to create a brochure which would promote adherence to non-pharmacological treatment and distribute it among clients at the Welfare Station in Kemi. The aim of this thesis is to improve the understanding of hypertension among clients at the Welfare Station, as a condition that can lead to dangerous, life-threatening diseases. And by that, increase the adherence to non-pharmacological treatment which may promote the overall health of the clients at the Welfare Station.

In the theoretical part of the thesis, hypertension, its pathophysiology, and promotion of health by non-pharmacological treatment is addressed. Aspects regarding health promotion and health education are also discussed. The theory was gathered by using databases such as PubMed and ResearchGate, but also Finnish independent national treatment recommendations based on research evidence Käypä hoito, World Health Organization recommendations and recommendations from Finnish and American heart associations. The brochure includes information about blood pressure and hypertension in general, the pathophysiology of high blood pressure and to which diseases untreated hypertension can lead to. Aspects of non-pharmacological treatment are also covered. The brochure made in this thesis is a Word document, which was transferred into PDF file. One illustration was added on the cover in addition to other design features such as different text styles in order to guide the patient through the information.

**Key words** hypertension, non-pharmacological treatment, brochure  
**Other information** the thesis includes a brochure.

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<b>Tekijä(t)</b>	Olga Wuopio	<b>Vuosi</b>	2024
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Opinnäytetyön toimeksiantajana toimi Lapin ammattikorkeakoulu, Hyvinvointipysäkki, joka tilasi verenpainetautia käsittelevän esitteen asiakkaiden ohjaukseen. Tämän opinnäytetyön tarkoituksena oli luoda esite, joka voi edistää verenpainetaudin lääkkeettömän hoidon tukemista ja jakaa sitä asiakkaille Hyvinvointipysäkillä. Opinnäytetyön tavoitteena on parantaa Hyvinvointipysäkin asiakkaiden ymmärrystä verenpainetaudista vaarallisiin, hengenvaarallisiin sairauksiin johtavana tilana. Ja sitä kautta lisätä lääkkeettömän hoidon noudattamista, mikä voi edistää Hyvinvointipysäkin asiakkaiden yleistä terveyttä.

Teoriaosassa kuvataan kohonnutta verenpainetta, sen patofysiologiaa ja terveyden edistämistä lääkkeettömän hoidon kautta. Myös terveyden edistämiseen ja terveystieteeseen liittyviä näkökohtia on kuvattu. Teoria koottiin käyttämällä tietokantoja, kuten PubMed ja ResearchGate, mutta myös suomalaisia itsenäisiä kansallisia hoitosuosituksia tutkimusnäyttöön perustuen Käypä hoito -suosituksia, Maailman terveysjärjestön suosituksia sekä suomalaisten ja amerikkalaisten sydänyhdistysten suosituksia. Esite on tehty Word-dokumenttina ja tehty PDF-tiedostoksi. Kannessa on käytetty yhtä kuvaa ja muita suunnitteluominaisuuksia ovat erilaiset tekstityylit asiakkaan ohjaamiseksi tiedon läpi.

Avainsanat  
Muita tietoja

verenpainetauti, lääkkeetön hoito, esite  
työhön liittyy esite.

## CONTENTS

1 INTRODUCTION.....	7
2 PURPOSE AND AIM.....	8
3 HYPERTENSION AND ITS TREATMENT.....	9
3.1 The functioning of circulatory system in the body .....	9
3.2 Physiological basis of blood pressure.....	9
3.3 Risk factors for hypertension.....	10
3.4 Blood pressure values and treatment considerations.....	10
3.5 Non-pharmacological treatment of high blood pressure.....	12
3.5.1 Weight and nutrition management.....	12
3.5.2 The importance of physical activity.....	13
3.5.3 Management of stress, alcohol and cigarette consumption.....	14
3.7 Consequences of untreated hypertension.....	14
4 HEALTH PROMOTION.....	16
4.1 Health education.....	16
4.2 Factors that affect adherence to treatment.....	17
4.3 Adherence to treatment from a nursing point of view.....	18
4.4 Health Belief Model.....	18
4.5 Educational brochures.....	19
5 IMPLEMENTATION OF THE THESIS.....	21
5.1 Planning phase.....	21
5.2 Effectiveness of brochures in health education.....	22
5.3 Contents of the brochure.....	23
5.4 Design of the brochure.....	24
6 ETHICS AND REALIABILITY OF THE THESIS.....	26
6.1 Ethics of the thesis .....	26
6.2 Reliability of the thesis .....	27
7 DISCUSSION.....	28

7.1	Meaning and importance of the topic.....	28
7.2	Learning outcome.....	29
7.3	Results, impact and future study opportunities.....	29
REFERENCES.....		31

## FOREWORD

I would like to thank my commissioner representative, the coordinator at the Welfare Station at Lapland University of Applied Sciences, Northern Well-being and Services - area of expertise, for the opportunity of development she gave me by ordering a brochure about promotion of adherence to non-pharmacological treatment. Working on this project has been an essential contribution for elaborating my skills in health promotion of the clients by planning the content of health education for them. I would also like to thank my teachers for guidance and support which was necessary for me in the planning, implementation, and evaluation phases of this project.

## 1 INTRODUCTION

Circulatory system provides the tissues of the body with oxygen and nutrition while eliminating metabolic waste. The oxygen and energy delivered are essential for maintaining health of the body's cells and organs. It is an advanced system, and it can be damaged by diverse pathogenic mechanisms. (Mitchell & Hill 2023, 718.)

When the heart pushes blood through the arterial blood vessels, the pressure it creates in the arteries, called the blood pressure (Hekkala 2023). Hypertension is a condition which is characterised by increasing in arterial blood pressure. The risks of harm to the blood vessels in the brain and kidneys, but also heart, increase as when the blood pressure rises. Heart disease and stroke can be preventable by managing hypertension, which is the main cause of these diseases worldwide. (World health organization 2015.)

Significant contributing factors for prevalence of high blood pressure, despite of progressive modern medicine and treatment, are that the population becomes more obsessive, and the age of the population is also increase. (Kodela, Okeke, Guntuku, Lingamsetty & Slonovschi 2023). Worldwide hypertension causes around 10.4 million premature deaths every year and about two million Finns are diagnosed with hypertension (Käypä hoito 2020). According to the research made by FinTerveys 2017, slightly more than half were taking blood pressure medication of those who were found to have hypertension. A little more than 40 percent of those who were medicated were in treatment balance. (Koponen, Borodulin, Lundqvist, Sääksjärvi & Koskinen 2018, 74.)

High blood pressure, even severely elevated, is often symptomless, or the symptoms are vague (Hekkala 2023). Because of the absence of symptoms, people diagnosed with this condition often neglect the adherence to the treatment and understand its importance only when they are diagnosed by life-threatening diseases which hypertension leads to. The purpose of this thesis was to create a brochure which will promote adherence to non-pharmacological treatment and distribute it among clients at Welfare Station in Kemi.

## 2 PURPOSE AND AIM

The purpose of this thesis was to create a brochure which will promote adherence to non-pharmacological treatment and distribute it among clients at Welfare Station in Kemi.

The aim of this thesis is to improve the understanding of hypertension among clients at Welfare Station, as a condition that leads to dangerous, life-threatening diseases. And by that, increase the adherence to non-pharmacological treatment which will promote the overall health of the clients at Welfare Station.



### 3 HYPERTENSION AND ITS TREATMENT

#### 3.1 The functioning of circulatory system in the body

Heart, arteries, veins and capillaries build a cardiovascular system and work in synergy in order to provide blood supply for the tissues and organs in the body. Blood vessels, which are arteries, veins and capillaries, have an important role by controlling the blood flow, that heart pumps into them, to the specific part of the body. Big arteries endure the highest pressure of the circulation and arterioles control blood flow to the certain parts of the organism. (Chaudhry, Miao & Rehman 2022.) Cardiovascular system provides the organism with nutrition and oxygen, but also dispose metabolic waste of the organism. This procedure is vital for the body and circulatory system support its essential needs. (Mitchell & Hill 2023, 718.)

Arteries have a multivarious function in the circulation. They are big vessels, which carry oxygen-rich blood to organs and tissues in the organism, but they also control blood pressure in the diastole phase. They also play an important role in homeostasis, which means that they can adjust themselves to vasoconstriction or vasodilation according to the needs of the organism. (Mitchell & Hill 2023, 718.)

#### 3.2 Physiological basis of blood pressure

When the heart pumps the blood into the arteries, the power that is applied on the wall of the blood vessels called the blood pressure. Hypertension means that blood vessels are constantly under high pressure which leads to the condition of the standing stress for them. (Mitchell & Hill 2023, 718.) The blood pressure can be systolic and diastolic.

The systolic blood pressure is a power that the heart uses when it pumps the blood through the blood vessels. The resistance to the blood flow in the blood vessels is called the diastolic pressure. High blood pressure is a constant raising in systolic or diastolic pressure. The risk of heart and blood vessel damage is associated with high blood pressure. (World health organization 2015.)

### 3.3 Risk factors for hypertension

Commonly blood pressure becomes constantly high by two reasons, which are lifestyle and aging, but it can also have a genetic. When we are speaking of an unhealthy lifestyle, several aspects such as smoking, abundant use of salt, obesity, small amount of exercise, high alcohol consumption and stress are concerned. Use of anti-inflammatory drugs is a risk factor for developing hypertension. (Pelttari 2023.) Besides that, male gender is also included in the risk factors for high blood pressure (Meinert, Thomopoulos & Kreutz 2023, 654 – 661).

Smoking damages heart and blood vessels, because the nicotine that cigarettes contain, stimulate the heart to beat at an increasing rate and rises the blood pressure (American Heart Association 2021). People who are suffering of more than 15 kilos of overweight have tendency to be sick three times more compared to the people with normal weight. Also, abundant use of salt and inactivity raises the blood pressure. (Verma et al. 2021, 1275–1283.) Constant use of drinks that contain alcohol leads to high percentage of hypertension in both male and female genders. Besides that, females are subjected to develop hypertension even if they consume alcohol in a moderate amount. (Husain, Asari & Ferder 2014, 245–252.)

Nonsteroidal anti-inflammatory drugs may induce high blood pressure when they are consumed. They rise blood pressure through different mechanisms which are associated with retention of sodium, vascular constriction and inhibition of prostaglandin. (Snowden & Nelson 2011, 184-189.) Furthermore, stress is also a contributing factor for increase in blood pressure. It affects homeostatic balance and due to its disturbance, the risk of developing hypertension arises. (Ayada, Toru & Korkut, 2015, 99-108.)

### 3.4 Blood pressure values and treatment considerations

A person is diagnosed with hypertension when the values are 140-159 and 90-99 mmHg. High blood pressure is a dangerous condition because usually

persons affected by this condition don't feel any symptoms and don't see the need of treatment or don't take their medication regularly. When systolic pressure is over 200 and diastolic pressure is over 130, a person might feel headache or dizziness. (Pelttari 2023.) Non-pharmacological treatment of hypertension should be started with aim of prevention of development of hypertension or in the early stages of the development of this condition. It has a good impact on the overall health, doesn't have side effects and may decrease the need for medication treatment in the future. (Kodela et al. 2023.)

Table 1. Blood pressure values and their interpretation (Pelttari 2023).

<b>Systolic pressure</b>	<b>Diastolic pressure</b>	<b>Interpretation</b>
120 mmHg	80 mmHg	Healthy blood pressure
130–139 mmHg	85–89 mmHg	Slightly elevated blood pressure or satisfying level of blood pressure
140-159 mmHg	90-99 mmHg	First degree hypertension
160–179 mmHg	100–109 mmHg	Second degree of hypertension or strongly elevated blood pressure
180 mmHg	110 mmHg	Third degree of hypertension or very high blood pressure

The treatment of high blood pressure starts with blood pressure monitoring. When blood pressure is within normal range, it is recommended to check it every two years and start to consider about implementing healthier lifestyle changes in daily practice. At satisfying level of blood pressure, it is recommended to start lifestyle therapy immediately, but also to check blood pressure values at home. When a person is diagnosed with first degree hypertension, the treatment should include lifestyle therapy and decision on drug treatment after 4-6 months. At second degree hypertension it is recommended to start medical treatment immediately or based on a 1–2-month follow-up. Finally, at third degree of hypertension the medical treatment starts immediately. (Hekkala 2023.)

High blood pressure is treated by several drug groups which are ACE inhibitors, ARB blockers, diuretics, and calcium channel blockers. Drugs that belong to the

beta blockers group low high blood pressure. They are mostly used when there is another condition than hypertension, for example coronary artery disease. (Tarnanen & Komulainen 2020.) Patients are more motivated to take medication for hypertension when they have better knowledge of the disease and understanding of its mechanisms. Patient-centred care plays an important role in promotion of adherence to medication treatment and includes counselling and education of patients but also correction of wrong opinions regarding long-term treatment. (Hamrahan, Maarouf & Fülöp 2022.)

### 3.5 Non-pharmacological treatment of high blood pressure

#### 3.5.1 Weight and nutrition management

Adjusting body weight within recommended limits plays a beneficial role in lowering both systolic and diastolic blood pressure. If the recommended limits are not gained and only 5-10 percent of the body weight is lost, it is still beneficial for lowering blood pressure. On the other hand, the weight lost should not be too rapid and it is recommended to follow the schedule of losing 0.5–1 kg per week. (Schwab 2023.)

A DASH diet, which means Dietary Approaches to Stop Hypertension, has been recommended as a nutritional mean of high blood pressure management. In people with hypertension, it reduces the systolic pressure by approximately 10 mmHg and diastolic blood pressure by 5-6 mmHg and in people with normal blood pressure the systolic by 3-4 mmHg and diastolic by 2 mmHg. One of the principles of DASH diet is to reduce salt intake and the allowed amount of salt per day is less than 5 grams per day. It is important to monitor food such as bread, cheese, cold meats and ready meals for amount of salt. The best option for bread is no more than 0.9% salt and at least 6 grams of fiber per 100 grams. Another important key point of DASH diet is consumption of at least 500 grams a day of vegetables, berries and fruits. It is also recommended to prefer whole grain products when eating bread, rice or pasta. It is important to consider the quality of fats when dairy products are concerned. It should be a fat-free milk, yogurt can contain 1 percent of fat and cheese no more than 17 percent. (Schwab 2023.)

The diet should include healthy fats like olive oil but also foods rich in those fats like nuts, avocados, hemp and flax seeds and fish rich in omega-3 fatty acids (Kodela et al. 2023). The minimal consumption of fish should be twice a week and other sources of protein can be turkey, chicken, and vegetable proteins. Furthermore, red meat such as beef, pork and lamb should not be eaten more than half a kilo per week. It is not recommended to consume sweet foods and drinks. (Schwab 2023.)

Products which are made on liquorice extract should not be consumed or consumed with moderation. Glycyrrhizin is an ingredient of liquorice which has a blood pressure rising effect. It affects even young people if they overconsume food made on liquorice. (Schwab 2023.)

### 3.5.2 The importance of physical activity

Exercise is one of the important lifestyle changes in non-pharmacological management of hypertension. Together with adjusted nutrition it can help handle slightly elevated blood pressure under control reducing the need for medication. Regular exercise which are aimed at increasing endurance power is almost as effective as one blood pressure medication and lowers systolic and diastolic pressure for approximately 4 mmHg. Furthermore, moderate exercise targeted at increasing muscle strength can reduce elevated resting blood pressure. (Kukkonen-Harjula 2021.)

Endurance exercise at a moderately intensive level, so that breathing speeds up, is an important key point and it is recommended to perform it at least 30 minutes every day. Endurance sports such as pole walking, cycling, swimming, and skiing are a good option because they help to activate large muscle groups of the body. It is also beneficial to perform 1 or 2 muscle strength exercises per week for 20 minutes. A good condition of muscles eases the stress that heart and circulatory system suffers during daily activities like lifting and carrying things. It is important to adjust the weights, they should not be too heavy, so that a person should be able to easily perform 20 repetitions. It is recommended to make 10-12

movements for major muscle groups like limbs, stomach, back and shoulders. (Kukkonen-Harjula 2021.)

### 3.5.3 Management of stress, alcohol and cigarette consumption

The use of alcohol should be avoided or limited to less than 14 servings or 160 grams for men and less than 9 servings or 100 grams for women per week. When it is concerned daily consumption, the intake of alcohol should be less than 5 servings or 55 g of alcohol. Furthermore, effectiveness of some blood pressure decreasing medications can be affected by alcohol consumption. (Käypä hoito 2020.) It is also recommended to stop smoking because it increases the activity of the sympathetic nervous system and as the result raises blood pressure (Hekkala, Pusa & Alapappila 2021).

Stress stimulates the nervous system and as a result hormones that narrow the blood vessels are produced. This leads to increase in blood pressure. If a person endure stress often the consequences of the repeated increasing in blood pressure might be hypertension. Acupressure, meditation and music therapy has been showed to be effective in stress management. (Kulkarni, O'Farrell, Erasi & Kochar 1998.)

### 3.6 Consequences of untreated hypertension

Hypertension destructs the organism without any clinical signs at first and it is noticeable for the person only after many years when it has led to dangerous diseases and conditions. High blood pressure negatively affects the walls of arteries, and this makes possible for fats that circulate in the blood to accumulate in walls of the arteries. As a consequence of this process the arteries become stiffer and has less inner space inside which limits the blood flow. (Pruthi 2023.) Consequences of untreated hypertension may be stroke, coronary heart disease and cardiovascular death, chronic kidney disease and dementias. The risk of these diseases could be minimized by preventing increase in blood pressure. Intensive treatment of hypertension helps to prevent degenerative changes in the vascular system. (Flávio, Fuchs & Whelton 2020, 285–292.)

Coronary heart disease manifests itself by formation of plaque in the arteries which are responsible for providing blood and oxygen to the heart. When the plaque is at the size that it is not allowing enough of blood to pass to the heart at increased demands, the chest pain occurs. It disappears after the heart doesn't need increased oxygen supply. Coronary heart disease can lead to acute coronary syndrome if the artery gets a total occlusion by the plaque. (Harrison, Coffman & Wilcox 2021.) Acute coronary syndrome is a condition when blood flow to the heart reduces suddenly, and this leads to death of cells in the heart which is called myocardial infarction (Pruthi 2023).

Hypertension damages even blood vessels in the arteries that supply the brain. The blood vessels strained by a high blood pressure can start to leak or break, there might be also a formation of the blood clot. (Pruthi 2023.) Stroke is a condition when a blockage of blood vessels happens. As a result, they might break which will lead to bleeding and death of brain cells because of lack of oxygen from the insufficient blood supply. (Kuriakose & Xiao 2020.) Stroke leads to death and disability, but high blood pressure is a risk factor for stroke which can be most modified (Murphy & Werring 2020).

Vascular dementia mostly affects people who are older than 65 years old and one of the most common causes of major neurocognitive disorder. While other major neurocognitive disorders caused by neurodegenerative proteinopathies, vascular dementia is caused by brain ischemia or haemorrhage. Cerebrovascular disease leads to disconnection of cognitive networks in the brain which in its turn leads to vascular dementia. (Sanders, School & Kalish 2023.)

Kidneys are essential for organism because they regulate fluid and electrolyte balance but also excrete metabolic waste. They are strongly connected to the function of cardiovascular system. (Dalal, Bruss & Sehdev 2023.) Hypertension can also affect the normal function of kidneys. High blood pressure damages the blood vessels that plays an important role in filtering of extra fluid and waste from the blood. (Pruthi 2023.)

## 4 HEALTH PROMOTION

Health promotion is an intervention that has its targets in raising awareness about people's health, but also to maintaining and to increasing the level of it. It includes social, physical, and mental aspects of human being. It encourages people on an individual and group levels to participate promoting own health and the health of the population. Furthermore, it emphasizes that people must be able to recognize own intensions and be capable to deal with the environmental factors.

Basic guiding principles for promotion of health is a strategy that is directed at different angles of human being, but also principles which are targeted at empowering, participatory, equitability, holism, and sustainability. It means that practitioners can decide about personal and environmental factors which affect their health, but also, they are involved in all phases of the decision making. Furthermore, to promote social, physical and mental health there are used concepts for social justice and equality as a cornerstone and variety of approaches and methods. (Haugan & Eriksson 2021, 5-7.)

The goal of health promotion is to influence in different areas of people's existence, which will lead to a result of health improvement: way of living, health services and different environments, including areas of physical, cultural, and socioeconomic wellbeing. According to the Ottawa Charter for Health Promotion, the focusing should be emphasized on certain areas such as generation of environments that can provide support, creating a policy which will emphasize public health, empowering action of the community, refocusing health services and encouraging personal skills growing. Health promotion consists of three elements which are: prevention of the disease, health education and health protection. (World Health Organization 2012, 15.)

### 4.1 Health education

Health education is a part of health promotion. It provides knowledge for individuals and groups about health and helps to improve it by influencing behavioural attitudes. (Kumar & Preetha 2012, 5-12.) Health education is a



method, which through educational activities, is aimed to motivate individuals and communities for changing lifestyles in order to promote their health. Furthermore, it is targeted on promotion of participation in services which are aimed on prevention of diseases. Health education not only encompasses spreading the information about health beneficial factors and information of prevention of illnesses, but also, it provokes motivation, develops skills and confidence which are necessary parts of decision making, which are needed to be developed before a person decides to take care of own health. (World Health Organization 2012, 15.)

Health education utilizes different techniques in furtherance of developing abilities of a person to promote own health. They include skill-building and consciousness-raising, but also education and developing of motivation. Health education mainly focuses on an individual and on environmental factors. The individual can be targeted through knowledge, personal power, reasoning, and intentions. Family and friends play a supportive role for an individual's decisions. Environmental factors include policies and laws that regulate healthy actions but also networks and norms lying within communities. (World Health Organization 2012, 21.)

Health education can be conducted through different instruments which include lectures, group discussions, presentations, or posters. Each of these instruments has own disadvantages and beneficial sides. The effectiveness of these methods is also varies depending on the specific situation and targeted group. It depends on the factors as age, background, education, and occupation. Furthermore, the methods should be suitable, so that the information can be received through cultural, psychological and environmental filters. (Saha, Poddar & Mankad 2005.)

#### 4.2 Factors that affect adherence to treatment

According to WHO classifications factors that affect adherence to treatment of hypertension are socioeconomic problems, issues within health-care system, condition-related factors, problems that arise during therapy and patient-related issues. Poor socioeconomic status leads to incapability of buying drugs but also

poor relationship between care providers and patients including bad communication skills and judgemental attitude which result in patient's unwillingness to compliance to the treatment. Education on pharmacological and non-pharmacological treatments is also important factor that affect patients' adherence. (World Health Organization 2003, 110.)

Low drug tolerability is another big issue which belongs to therapy related issues (World Health Organization 2003, 110). For example, ACE inhibitors may have side effects as dry cough, headaches and loss of taste (Pruthi 2023). Another group of antihypertensive drugs Calcium Channel Blockers can cause constipation, flushing, peripheral oedema and headaches (McKeever & Hamilton 2022).

#### 4.3 Adherence to treatment from a nursing point of view

Adherence to treatment from a nursing point of view revolves around relationship with the patient which is achieved by collaboration and between a nurse and a patient. The nurse provides the patient information about the disease and its complications. Furthermore, the nurse influences the patient's decision by explaining the benefits of adherence to the treatment. (Costa et al. 2021, 10.)

The information should be provided in a manner that the patient understands the importance of self-care but on the other side with respect for patient's autonomy. The interaction between patient and the nurse can be implemented by different ways. For example, it can be home visits, counselling on individual and group levels, digital technologies which can be used to share the information that promotes treatment. (Costa et. al 2021, 10.)

#### 4.4 Health Belief Model

Health Belief Model is an individual centred model which identifies aspects of person's change of behaviour in order to promote own health. An individual should be ready to change behaviour habits, otherwise the information received

through patient guidance methods will not be efficient. (Green, Gryboski, Murphy & Sweeny 2020, 2-3.) It consist of six components, which are: degree of difficulty, advantages, signal to acting, obstacles, effectiveness and receptivity that the person experience (LaMorte 2022).

It means that every person has own perception about how dangerous the disease is and individual estimation of the risks to acquire it. The person also estimates the effectiveness of actions for prevention of the disease and accepts the recommendations if they are considered as useful. The obstacles for following the recommendations are also considered and for every person they are individual, the obstacles and the benefits are compared with each other. To start health promotion action, the person needs a stimulus which can be external or internal and confidence in managing the action successfully. (LaMorte 2022.)

#### 4.5 Educational brochures

One of the most crucial parts in health promotion of hypertension is education of the patients. Both blood pressure control and patient guidance has been proven to boost patients' self-management abilities by increasing understanding and helping patients to make effective decisions related to managing their condition. (Ukoha-Kalu et al. 2023, 1–2.) A meta-analysis conducted by Tam, Ling Wong and Cheung showed that phone calls, reading materials and message reminders, after patient education conducted in form of a group discussion, was effective and motivated patients for improving their lifestyles and control for their blood pressure (Tam, Ling Wong & Cheung 2020).

A study conducted by medical students at Florida State University College of Medicine, aimed at determining the effectiveness of educational brochures, showed that brochures were effective in-patient education for those who had been diagnosed with hypertension and even for those who haven't. The conclusion of the study is based on the assessment of knowledge of the participants, after they had read the brochures. It is explained by the fact that information in the brochure in the study was interesting and easy to understand. The results of the study showed that brochures can be a cost-effective and easily

accessible method of health education when they are written at an appropriate reading level for the target group and are freely available. (Cote, McFarland & Tortorici 2021, 888.)

Another study, conducted by Damla and Nuran and aimed at determining the appropriate nursing activities in education and counselling of the patients with diagnosed hypertension, showed that patients would like to get more knowledge about how to prevent heart attack and stroke by lifestyle changes and use of medication. But also, they would like to know more about how to act in case of stroke or heart attack and in what case they can apply for hospital care. (Damla & Nuran 2018, 1073-1082.)

## 5 IMPLEMENTATION OF THE THESIS

Functional thesis has its goal of development a professional output that serves the target group, for example the customers. Student shows own professional expertise through a product which is made with a research approach and developing. The output can be a concrete object or an event. The functional thesis is conducted with a developmental and research approach in accordance with the principles of the developmental process. (Kostamo, Airaksinen & Vilkkä 2022, 11-17.) In functional thesis it is not necessarily to use research methods, but the collection of material and information should be carefully considered (Vilkkä & Airaksinen 2003, 56).

In this functional thesis, the data has been collected with consideration of trustworthy information from reliable sources. Furthermore, the date of the issue of the information is also carefully considered and the most recent information available has been used. The product of this functional thesis is a brochure that is aimed for development of knowledge about hypertension among clients at Welfare station in Kemi and promotion of their adherence to non-pharmacological treatment.

### 5.1 Planning phase

The idea for the theme for this thesis has occurred when the author has been at the practical training at Welfare Station in Kemi in the spring and autumn of 2023. When the author has worked with clients by interviewing them about their health and taking measurements, it was clearly noticeable that many of the people had a high or elevated blood pressure. The author has discussed the situation with a coordinator at Welfare Station at Lapland University of Applied Sciences, Northern Well-being and Services - area of expertise, and suggested to create a brochure for the clients in order to increase their knowledge about hypertension to promote their adherence to non-pharmacological treatment. At first the author suggested to create a brochure which would cover only adherence to medication treatment for hypertension and high cholesterol. However, in the progress of gathering and processing the information for the brochure, but also at the end of her practical training, the author changed the planned content of the brochure

based on the discussion with the commissioner. It has been decided that it is more important to only concentrate on providing knowledge to the clients about hypertension, because non-pharmacological treatment is an essential part of the treatment and prevention of this condition and a brochure which contains too much information would not provoke interest in clients.

The thesis plan had been accepted by the supervising teacher in December 2023 and in February 2024, the author had been working on the planning of the content of the brochure and on its design. The theory was gathered by using databases such as PubMed and ResearchGate, but also Käypä hoito which is Finnish independent national treatment recommendations based on research evidence, World Health Organization recommendations and recommendations from Finnish and American heart associations. Finally, at the end of March 2024 the brochure has been created. The first version of it was modified because the brochure is written in Finnish language which is not a native language for the author. So, some spelling mistakes and expressions were corrected with help of the supervising teacher.

## 5.2 Effectiveness of brochures in health education

When planning the content of any health education method, there should be considered educational level, needs and health status of the target group. This provides enthusiasm and concern among patients to take care of their high blood pressure. The information should be also easy applicable to an everyday life of the patients. Educational materials should be designed regarding to individual differences such as learning and plurality. Furthermore, understanding of special features of the target group will lead to a successful educational strategy. (Martínez-Riera et al. 2022.)

The methods of patients' education can be television and films about health, but also leaflets and posters, not mentioning radio, multimedia advertising and medical lectures. Distribution of leaflets is a suitable method when it is necessary to deal with a bigger audience and posters targeted for health education is an applicable mean of health education when target group of health promotion is

large, and the place is observed to protect the poster from destroying. (Hasanica et al. 2020.)

Patients usually forget most of the information that they have received through communication with a health care provider and only 20 percent of the message applied to them assimilates in their memory. The retake of the information applied for patients may be improved by 50 percent if the verbal information is supplemented by written. Besides that, written information may increase the effectiveness of medical services by improving the adherence to therapy and self-care measurements, lowering the level of anxiety and finally, by facilitating the communication between health care providers and patients. (Moult, Franck & Brady 2004, 166.)

### 5.3 Contents of the brochure

The content of the brochure has been carefully considered and written in a way, that a large number of people can be interested in it. The professional terms have been substituted by the basic expressions, easily understandable by non-professionals. With purpose to arouse interest in reading, the author has placed a question on the cover of the brochure which asks the readers about their knowledge of hypertension. Under the main heading there is a subheading which encourage the readers for taking care of their health.

There have been covered four different aspects related to treatment of hypertension, which are aimed at understanding and the grade of dangerousness of the condition, but also how to improve the situation and some simple reference values. The author of the brochure has used simple sentences and had chosen the information written in the brochure carefully in order to provide an important knowledge and patient guidance, however, at the same time not bother the readers with unnecessary information which can affect negatively the interest and engagement of reading.

In the first aspect of the brochure, the author gives the readers understanding about what a blood pressure is and what is a hypertension. In the second aspect,

the author brings the readers understanding about dangerousness of the condition by explaining pathophysiology on a basic level and consequences of the untreated condition. The author chose to write about the consequences that hypertension leads to deliberately on the second page of the brochure. Patients are more motivated to follow the treatment, when they have better knowledge of the disease and understanding of its mechanisms. (Hamrahian. et al 2022.)

In the third aspect of the brochure the author gives the solution for the clients how to promote their health by non-pharmacological approach. This section includes recommendations about weight management, healthy nutrition, exercise, minimalization of alcohol and smoking consumption and how to manage stress. Finally, the author gives some basic values of what a good and elevated blood pressure is, but also when hypertension is diagnosed. When hypertension is already diagnosed, the lifestyle therapy is not enough and there should be considered a treatment with medication.

#### 5.4 Design of the brochure

The brochure is created in the Word-document on two pages and the format that has been used is Letter which is 21,59 cm x 27,94 cm. Afterwards, the brochure was converted into PDF file and printed. Each page has been divided in three columns. There has been used only one picture of a heart on the cover of the brochure in order to draw attention of the readers. The author didn't find necessary to have other pictures in the brochure, because they can remove the readers' focus from the text. On the other side, the brochure is created using four different colours like red, green, white, and black. Decision on the colours is made with attention to guide the reader through the content.

Each section of the brochure is written using Calibri 19 bold style and two of them which are concern the information about general knowledge and health promotion are coloured in green but the heading of the section which contains information about the consequences of untreated hypertension is coloured in red.



The subheadings of the sections are written using black and red Calibri 16 bold text style. There are also some other design solutions like some important sentences are written in Calibri 16 Cursive style and the whole sentences are coloured in green and red colours. The main text is written in Calibri 12 black.

The size of the text is chosen deliberately with consideration of the target group's reading opportunities. It is a little bit bigger than usual because the main costumers at Welfare station is at mature age and most of them are in need of reading glasses. Therefore, the size of the text is also promoting costumers' interest in reading of the brochure.

## 6. ETHICS AND RELIABILITY OF THE THESIS

### 6.1 Ethics of the thesis

In health communication it is essential to follow ethical principles such as non-maleficence but also justice and respect for personal autonomy. The communication should be based on respect and not on intimidation. Furthermore, the information should be provided on a suitable language which is comprehensive for the clients, and it should be presented sufficiently. The structure of the information provided should be composed in a way that let clients to decide by analysing information on their own premises. Also, they have to be able to see that the information is worth of trust. (Strasser & Gallagher 1994, 175-177.)

The information should be adjusted, so that there is not too much data which may confuse the reader and impair comprehension and adoption of the information. (Strasser & Gallagher 1994, 175-177). To present someone's ideas, words or results without refer to the original source of information is called plagiarism (Soundararajan, Devi, Saravanakumar & Radha 2022). Plagiarism contradicts ethical principles, and it is avoided in this thesis. All sources are carefully noticed with credits to the original sources.

Conflicts of interest might be also an ethical issue because it can lead to misjudgements and actions which are influenced by the second interest of the investigator and as a result lead to wrong results (Romain 2015). Research integrity is an important part of research practices. It includes careful consideration of the methodology used but also reliability, use of the resources and analysis of them. An important part of the research integrity is also honesty in reviewing and reporting the results. (All European Academies 2017.) The author of this thesis has followed ethical guidelines by interpreting and analysing the information used for theoretical basis honestly and by careful planning and consideration of the methodology used.

## 6.2 Reliability of the thesis

The use of data with consistency and collecting data with accuracy refers to reliability (Gerrish, Lacey & Cormack 2010, 169). It is important to compare and combine information from the sources and to comply it into a clear, consistent and structured text (Kostamo at al. 2022, 84). The author, the date of publication and the credibility of the source is important to consider in purpose to acquire a reliable information. The source should be as new as possible, and the author should be a recognized expert. (Vilkka & Airaksinen 2003, 72-76.)

Also, it is important as much as possible to use primary and not secondary sources, because secondary sources are usually already processed by other people and the information in them may be not as accurate. In functional thesis it is more important to put attention to quality and suitability of the sources than collect irrelevant ones with purpose to make thesis to look longer. (Vilkka & Airaksinen 2003, 72-76.)

The author of this thesis used trustworthy information from scientific articles and current national Finnish and international treatment recommendations when she was gathering the theoretical basis of the thesis. The information was also processed in a way that the author used the newest sources available because there is a lot of research in a medicine and health field and recommendations for treatment often changes. It is important that the patients get the newest information about treatment because they don't know where to seek it and by providing the newest, evidence-based information the author aimed at gaining their trust and increase their adherence to the treatment.

## 7 DISCUSSION

### 7.1 Meaning and Importance of the topic

About 8.5 million deaths worldwide from vascular diseases like stroke and coronary heart disease, but also by kidney disease has been caused by high blood pressure. The dangerous condition is easily diagnosed at the primary health care and can be effectively treated by treatments which don't demand much economical resources. Moreover, some drugs that are used for treatment of this condition is available at a low cost. (NCD Risk Factor Collaboration 2021.) Worldwide hypertension causes around 10.4 million premature deaths every year and about two million Finns are diagnosed with hypertension (Käypä hoito 2020). According to the research made by FinTerveys 2017, slightly more than half were taking blood pressure medication of those who were found to have hypertension. A little more than 40 percent of those who had medication prescribed were in the treatment balance. (Koponen. et al. 2018, 74.)

High blood pressure, even severely elevated, is often symptomless, or the symptoms are vague (Hekkala 2023). Because of absence of symptoms, people diagnosed with this condition often neglect the adherence to the treatment and understand its importance only when they are diagnosed by life-threatening diseases which hypertension leads to. There is a huge need in educating people about hypertension as a threatening condition and which consequences it leads to.

Non-pharmacological treatment of hypertension should be started with aim of prevention of development of hypertension or in the early stages of the development of this condition (Kodela et al. 2023). When a person is diagnosed with first degree hypertension, the treatment should include lifestyle therapy and decision on drug treatment after 4-6 months (Hekkala 2023). It is important to educate clients regarding non-pharmacological prevention of the condition which indicates a healthy lifestyle as a first action of health promotion.

## 7.2 Learning outcome

By making this project I have deepened my understanding and knowledge about hypertension and its non-pharmacological treatment. I have also investigated the reasons why people don't want to commit for the treatment and strategies how to motivate and encourage them. I have learned about different means of health education and was able to identify the best suitable for the target group. Previously, I didn't have any experience in making the three-column brochures, nor developing design for them in order to motivate people. This was a huge beneficial experience for me. In the future, in my work life, I will be able to conduct a discussion about health promotion with clients and even use other means of health education.

I have also sharpened my skills in searching for reliable, evidence-based information and I have developed in planning, creating, and evaluating of a huge project. I have encountered some difficulties in the beginning of writing of my project because after I have started working on it, I realised that I had to adjust the theme of the project for better outcome of the product. It was also a good experience for me to understand what is more important in patient's education and make a decision on changing little bit the main theme of the brochure.

## 7.3 Results, impact, and future study opportunities

I am satisfied with this project. I have made a brochure for clients at Welfare Station in order to promote their adherence to non-pharmacological treatment of hypertension. There is a need for this information because most of the clients in Welfare Station who had a high blood pressure didn't see any danger in it. By reading the brochure the clients get a structured, carefully considered vital information, which they can also read at home because patients often forget the large number of matters which are discussed with them by health care professionals, and it is always worth to give written instructions in addition to discussion. By reading the brochure the clients will understand that hypertension is a dangerous condition, and this will motivate them to change their lifestyles.

This brochure makes easier for personal of Welfare Station to discuss the matters related to high blood pressure with the patients, because health promotion should always start from a conversation with the patient. The students who are going practical training at Welfare Station can sharpen their strategies in how to motivate patients for commitment of treatment with help of my brochure. This is important for their future work because they can develop their professional skills as nurses who are able to motivate patients for commitment of treatment. This will be a beneficial contribution in promotion of health in Finnish population in general and especially in Kemi area.

The commissioner, who is a coordinator at Welfare Station at Lapland University of Applied Sciences, Northern Well-being and Services - area of expertise, has given her feedback about the brochure. She is satisfied with the output of this project and commented that the brochure is good and clear, but also that the main points of patient education in hypertension came across well. The commissioner has mentioned that the brochure is easy to share with the customers and one of the occasions when she can utilize it, is when the personal of the Welfare Station is on ONNI car tours.

The future studies could be made in accessing how effective the brochure is in patient education. The level of knowledge about hypertension among the members of Kemi's municipality area could be investigated after the brochure has been distributed. Another investigation could be conducted in assessing the commitment to non-pharmacological treatment of hypertension among clients.

## REFERENCES

- All European Academies 2017. The European Code of Conduct for Research Integrity. Accessed on 8 of April 2024 <https://www.allea.org/wp-content/uploads/2017/03/ALLEA-European-Code-of-Conduct-for-Research-Integrity-2017-1.pdf>
- American Heart Association. 2021. How Can I Quit Smoking. Accessed on 20 September 2023 <https://www.heart.org/-/media/Files/Health-Topics/Answers-by-Heart/How-Can-I-Quit-Smoking.pdf>
- Ayada, C., Toru, Ü. & Korkut, Y. 2015. The relationship of stress and blood pressure effectors. Hippokratia, 2015, 19(2), 99-108. Accessed on 20 September 2023 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4938117/>
- Cote, B., McFarland, C. & Tortorici, L. 2021. Impact of Hypertension Education Pamphlets in the Primary Care Setting. International Journal of Caring Sciences, 2020, 14(2), 888. Accessed on 19 February 2024 [https://www.internationaljournalofcaringsciences.org/docs/9\\_baire\\_original\\_14\\_2.pdf](https://www.internationaljournalofcaringsciences.org/docs/9_baire_original_14_2.pdf)
- Chaudhry, R., Miao, J.H. & Rehman, A. 2022. Physiology, Cardiovascular. StatPearls Publishing. Accessed on 20 September 2023 <https://pubmed.ncbi.nlm.nih.gov/29630249/>
- Dalal, R., Bruss, S. Z. & Sehdev, J. S. 2024. Physiology, Renal Blood Flow and Filtration. StatPearls Publishing. Accessed on 2 March 2024 <https://www.ncbi.nlm.nih.gov/books/NBK482248/>
- Damla, B. & Nuran, T. 2018. Determination of Nursing Activities for Prevention of Heart Attack and Stroke in Hypertension Patients. International Journal of Caring Sciences, 2018, 11 (2), 1073-1082. Accessed on 19 February 2024 <https://www.proquest.com/docview/2148636778?sourcetype=Scholarly%20Journals>
- Fuchs, F.D. & Whelton, P.K. 2020. High Blood Pressure and Cardiovascular Disease. Hypertension, 2020, 75(2), 285–292. Accessed on 2 October 2023 <https://pubmed.ncbi.nlm.nih.gov/31865786/>
- Gerrish, K., Lacey, A. & Cormack, D. 2010. The research process in nursing. John Wiley & Sons, Incorporated. Accessed on 10 November 2023 <https://ebookcentral-proquest-com.ez.lapinamk.fi/lib/ulapland-ebooks/detail.action?docID=1166315>

Green, C. G., Gryboski, K., Murphy, E. M. & Sweeny, K. 2020. The Health Belief Model. Wiley & Sons Ltd Publishing. Accessed on 15 February 2024

[https://www.researchgate.net/publication/346891594\\_The\\_Health\\_Belief\\_Model](https://www.researchgate.net/publication/346891594_The_Health_Belief_Model)

NCD Risk Factor Collaboration, 2021. Worldwide trends in hypertension prevalence and progress in treatment and control from 1990 to 2019: a pooled analysis of 1201 population-representative studies with 104 million participants. *Lancet* 2021, 398((10304), 957–80. Accessed on 15 February 2024.

<https://www.thelancet.com/action/showPdf?pii=S0140-6736%2821%2901330-1>

Kodala, P., Okeke, M., Guntuku, S., Lingamsetty, S. S. P. & Slonovschi, E. 2023. Management of Hypertension With Non-pharmacological Interventions: A Narrative Review. *Cureus*, 2023 15(8) Accessed on 2 March 2024

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC10478605/>

Koponen, P., Borodulin, K., Lundqvist, A., Sääksjärvi, K. & Koskinen, S. 2018. Terveys, toimintakyky ja hyvinvointi Suomessa. *FinTerveys 2017 tutkimus*. Accessed on 20 September 2023

[https://www.julkari.fi/bitstream/handle/10024/136223/Rap\\_4\\_2018\\_FinTerveys\\_verkko.pdf?sequence=1&isAllowed=y](https://www.julkari.fi/bitstream/handle/10024/136223/Rap_4_2018_FinTerveys_verkko.pdf?sequence=1&isAllowed=y)

Kostamo, P., Airaksinen, T. & Vilkka, H. 2022. Kirjoita itsesi asiantuntijaksi. 2<sup>nd</sup> edition. Tallin: Art House Oy Publishing.

Kulkarni, S., O'Farrell, I., Erasi, M. & Kochar, M. S. 1998. Stress and hypertension. *WMJ*, 1998, 97(11), 34-8. Accessed on 2 March 2024

<https://www.ncbi.nlm.nih.gov/books/NBK564304/>

Kumar, S. & Preetha, G. Health promotion: an effective tool for global health. *Indian Journal of Community Medicine*, 2012, 37(1), 5-12. Accessed on 10 November. doi: 10.4103/0970-0218.94009.

Kuriakose, D. & Xiao, Z. 2020. Pathophysiology and Treatment of Stroke: Present Status and Future Perspectives. *International Journal of Molecular Sciences*, 2020, 21(20), 7609. Accessed on 2 March 2024

<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7589849/>

Käypä hoito 2020. Kohonnut verenpaine. Accessed on 2 October 2023

<https://www.kaypahoito.fi/hoi04010>

LaMorte, W. W. 2022. The Health Belief Model. Boston University School of Public Health. Accessed on 15 February 2024

<https://sphweb.bumc.bu.edu/otit/mph-modules/sb/behavioralchangetheories/behavioralchangetheories2.html>



Lima Costa, K. F., Vieira, A. N., Firmino Bezerra, S. T., Silva, L. F., Freitas, M. C. & Cavalcante Guedes, M. V. Nursing Theory for Patients' Compliance with the Treatments of Arterial Hypertension and Diabetes Mellitus. *Texto & Contexto Enfermagem*, 2021, vol 30. Accessed on 10 November 2023 <https://www.scielo.br/j/tce/a/YBhjSQ4kCrKTxBfWH9gpC3g/?format=pdf&lang=en>

Martínez-Riera, J. R., Aviles Gonzalez, C. I., Zambrano Bermeo, R. N., Curcio, F., González Correa, J. A., Estrada González, C., Melo, P. & Galletta, M. 2022. Educational Strategies to Promote Adherence to Treatment in Patients with Cardiovascular Disease. *International Journal of Environmental Research and Public Health*, 2022, 19(16). Accessed on 19 February 2024 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9407903/>

McKeever, R. G. & Hamilton, R. J. 2022. Calcium Channel Blockers. StatPearls Publishing. Accessed on 2 October 2023. <https://www.ncbi.nlm.nih.gov/books/NBK482473/>

Meinert, F., Thomopoulos, C. & Kreutz, R. Sex and gender in hypertension guidelines. *Journal of Human Hypertension*, 2023, 37, 654–661. Accessed on 2 October 2023 <https://doi.org/10.1038/s41371-022-00793-8>

Mitchell, A. & Hil, I. B. The vascular system and associated disorders. *British Journal of Nursing*, 2023, 32(15), 718-724. Accessed on 2 October 2023 doi: 10.12968/bjon.2023.32.15.718.

Moult, B., Franck, L. S. & Brad, H. 2004. Ensuring Quality Information for Patients: development and preliminary validation of a new instrument to improve the quality of written healthcare information. *Health Expectations*, 2004, 7 (2), 165–175. Accessed on 19 February 2024 <https://onlinelibrary.wiley.com/doi/full/10.1111/j.1369-7625.2004.00273.x>

Murphy, S.J. & Werring, D. J. 2020. Stroke: causes and clinical features. *Medicine*, 2020, 48(9), 561-566. Accessed on 2 March 2024 <https://pubmed.ncbi.nlm.nih.gov/32837228/>

Hamrahian, S. M., Maarouf, O. H. & Fülöp, T. A. 2022. Critical Review of Medication Adherence in Hypertension: Barriers and Facilitators Clinicians Should Consider. *Patient Prefer Adherence*, 2022 (7) 16, 2749-2757. Accessed on 2 March 2024 <https://pubmed.ncbi.nlm.nih.gov/36237983/>

Hasanica, N., Ramic-Catak, A., Mujezinovic, A., Begagic, A., Galijasevic, K. & Oruc, M. 2020. The Effectiveness of Leaflets and Posters as a Health Education Method. *Mater Sociomed*, 2020, 32(2), 135-139. Accessed on 15 February 2024 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7428890/>

Haugan, G. & Eriksson, M. 2021. Health Promotion in Health Care – Vital Theories and Research. Switzerland: Springer Cham Publishing. Accessed on 15 February 2024 <https://link.springer.com/book/10.1007/978-3-030-63135-2>

Hekkala, A.-M. 2023. Kohonnut verenpaine. Sydänliitto. Accessed on 2 March 2023 <https://sydan.fi/fakta/kohonnut-verenpaine/>

Hekkala, A.-M. 2023. Verenpaine. Sydänliitto. Accessed on 2 October 2023 <https://sydan.fi/fakta/verenpaine/>

Hekkala, A.-M., Pusa, T. & Alapappila, A. 2021. Verenpaineen hoito elintavoilla. Sydänliitto. Accessed on 2 March 2024 <https://sydan.fi/fakta/verenpaineen-hoito-elintavoilla/>

Husain, K., Ansari, R. A. & Ferder, L. Alcohol-induced hypertension: Mechanism and prevention. World Journal of Cardiology, 2014, 6(5), 245-252. Accessed on 20 September 2023 doi: 10.4330/wjc.v6.i5.245.

Pelttari, H. 2023. Kohonnut verenpaine. Lääkärikirja Duodecim. Accessed on 20 September 2023 <https://www.terveyskirjasto.fi/dlk00034>

Riera, Aviles Gonzalez, Zambrano Bermeo, Curcio, González Correa, Estrada González, Melo & Galletta 2022)

Romain, P. L. 2015. Conflicts of interest in research: looking out for number one means keeping the primary interest front and centre. Current Reviews in Musculoskeletal Medicine, 2015, 8(2), 122-127. Accessed on 8 of April 2024 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4596167/>

Saha, A., Poddar, E. & Mankad, M. 2005. Effectiveness of different methods of health education: A comparative assessment in a scientific conference. BMC Public Health 5 (88). Accessed on 15 February 2024 <https://bmcpublichealth.biomedcentral.com/articles/10.1186/1471-2458-5-88>

Sanders, A. E., School, C. & Kalish, V.B. 2023. Vascular Dementia. StatPearls Publishing; 2024. Accessed on 2 March 2024 <https://www.ncbi.nlm.nih.gov/books/NBK430817/>

Sandhya Pruthi, M.D. 2023. Mayo Clinic. Angiotensin-converting enzyme (ACE) inhibitors. Accessed on 2 October 2023 <https://www.mayoclinic.org/diseases-conditions/high-blood-pressure/in-depth/ace-inhibitors/art-20047480>

Sandhya Pruthi, M.D. 2023. Mayo Clinic. High blood pressure dangers: Hypertension's effects on your body. Accessed on 2 March 2024

<https://www.mayoclinic.org/diseases-conditions/high-blood-pressure/in-depth/high-blood-pressure/art-20045868>

Schwab, U. 2023. Kohonneen verenpaineen ravitsemushoito. Lääkärikirja Duodecim. Accessed on 2 March 2024 <https://www.terveyskirjasto.fi/dlk01326#s2>

Snowden, S. & Nelson, R. The effects of nonsteroidal anti-inflammatory drugs on blood pressure in hypertensive patients. *Nature Reviews Cardiology*, 2011, 19(4), 184-191. Accessed on 20 September 2023 doi: 10.1097/CRD.0b013e31821ddcf4.

Soundararajan, M., Saravanakumar, A.R., Padmini Devi, K. R. & Radha. R. Ethics and Plagiarism: A Researcher's Perspective. *Journal For Basic Sciences*, 2022, 12(22), 11-18. Accessed on 10 November 2023. [https://www.researchgate.net/publication/365978596\\_Ethics\\_and\\_Plagiarism\\_A\\_Researcher%27s\\_Perspective](https://www.researchgate.net/publication/365978596_Ethics_and_Plagiarism_A_Researcher%27s_Perspective)

Strasser, T. & Gallagher, J. The ethics of health communication. *World Health Forum*, 1994, 15(2), 175-7. Accessed on 10 November 2023. <https://pubmed.ncbi.nlm.nih.gov/8018285/>

Tam, L. H., Ling Wong, E. M. & Cheung, K. 2020. Effectiveness of Educational Interventions on Adherence to Lifestyle Modifications Among Hypertensive Patients: An Integrative Review. *International Journal of Environmental Research and Public Health*. 17(7) Accessed on 19 February 2024 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7177836/>

Tarnanen, K. & Komulainen, J. 2020. Verenpaine koholla. *Terveyskirjasto Duodecim*. Accessed on 10 November 2023 <https://www.terveyskirjasto.fi/khp00016#s8>

Ukoha-Kalu, O. B., Isah, A., Biambo, A. A., Samaila, A., Abubakar, M. M., Kalu, U. A. & Soyiri, I. N. 2023. Effectiveness of educational interventions on hypertensive patients' self-management behaviours: an umbrella review protocol. *BMJ Open* 13(8) Accessed on 19 February 2024 <https://bmjopen.bmj.com/content/13/8/e073682>

Verma, N., Rastogi, S., Chia, Y. C., Siddique, S., Turana, Y., Cheng, H. M., Sogunuru, G. P., Tay, J. C., Teo, B. W., Wang, T. D., Tsoi, K. K. F. & Kario, K. Non-pharmacological management of hypertension. *The Journal of Clinical Hypertension*, 2021, 23(7), 1275-1283. Accessed on 19 February 2024 <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC8678745/>

Vilka, H. & Airaksinen, T. 2003. Toiminnallinen opinnäytetyö. Jyväskylä: Gummerus Kirjapaino Oy Publishing.

World health organization 2015. Noncommunicable diseases: Hypertension. Accessed on 2 October 2023 <https://www.who.int/news-room/questions-and-answers/item/noncommunicable-diseases-hypertension>

World Health Organization 2012. Health education: theoretical concepts, effective strategies and core competencies. Accessed on 15 February 2024 [https://iris.who.int/bitstream/handle/10665/119953/EMRPUB\\_2012\\_EN\\_1362.pdf?sequence=1&isAllowed=y](https://iris.who.int/bitstream/handle/10665/119953/EMRPUB_2012_EN_1362.pdf?sequence=1&isAllowed=y)

World Health Organization 2003. Adherence to long-term therapies. Evidence for action. Accessed on 2 October 2023 <https://iris.who.int/bitstream/handle/10665/42682/9?sequence=1>