

**Non-Pharmacological Methods for Managing
Hypertension: An Analysis of Lifestyle Changes and
Patient Education**

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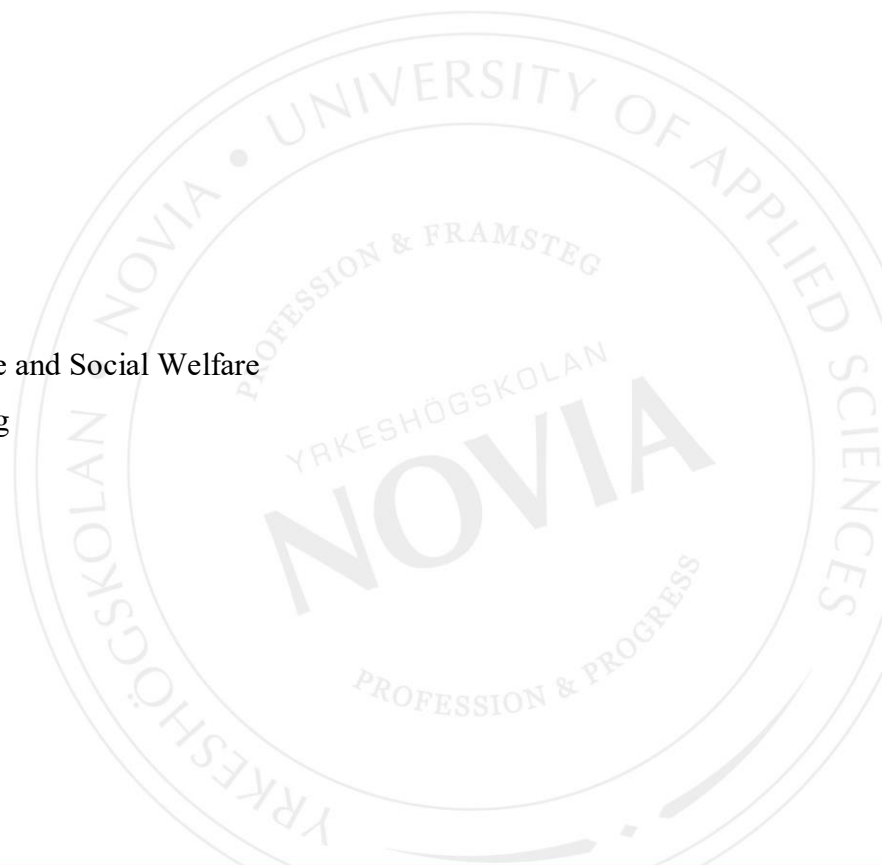


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ABBREVIATIONS

BP	Blood Pressure
CVD	Cardiovascular diseases
HBP	high blood pressure
EH	Essential hypertension
ICN	International council of nursing
JNC	Joint National Committee classification
WHO	World Health Organization
HT/HTN	Hypertension
SCT	Social Cognitive theory
SLT	Social Learning theory
TTM	Trans Theoretical Model
QCA	Qualitative content analysis
DASH	Dietary Approaches to Stop Hypertension

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Summary

Hypertension (HT) is a global wide health risk. The importance of hypertension as a major cause of morbidity and mortality is well understood and documented in economically developed countries. However, the management methods apart from medications prescribed by doctors is not fully recognized. The prevalence of hypertension globally varies from country to country and from one continent to another, with ethnicity being of no exception. Data from most countries and regions suggest that between 40 percent of adult men and women have hypertension (WHO, 2013).

The aim of this study is to find out how lifestyle modifications is applied in the control of hypertension, and what does nurses and other health care professional need to do to encourage patients into adopting new healthy ways of living. Two theories have been selected to help explain the lifestyle change process (Trans-theoretical model and the health belief model).

The findings of the study have shown two categories; maintenance of a healthy body weight comprising of eating a balanced diet (DASH) and regular exercise as sub-categories. Adoption of health habits is the other category in the findings, it comprises of smoking cessation, moderate alcohol consumption, salt intake reduction, and increasing potassium intake. Furthermore, Patient education is shown to improve knowledge about the disease and help with encouraging commitment towards making necessary lifestyle changes.

Language: English Key words: Lifestyle modification/changes, patient education, hypertension, healthy eating

1. INTRODUCTION

Hypertension is regarded as a multifactorial and chronic disease, officially, depending on what type of hypertension one is experiencing; the mechanism can be very complex and difficult to understand. (Wang & Peng, 2013). Despite being found to be important risk factor by clinical and research scientists, environmental and genetic factors affecting hypertension are still unexplainable. The pathogenesis of essential hypertension and the potential mechanism underlying the origin and development of HT are not clear. Blood pressure is hypothesized to be regulated by three basic factors namely environmental, genetic and compensatory factors. The prevalence of HT has been rising, and is at the moment considered one of the major public health problems worldwide (WHO 2013.2).

Depending on what geographical part of the globe an hypertensive patient comes from, the quality and availability of information concerning health and healthy ways of living usually vary (Planas, Greiner, L. & Greiner, A., 2016). As compared to economically developed countries, most developing economies experience poor health care management leading to increased prevalence of chronic diseases including hypertension. According to (Planas, et al. 2016) the lack of awareness, treatment and control of hypertension contributes to rising levels of cardiovascular diseases in developing countries. Through an analysis of worldwide hypertension data, it is estimated that by 2025, almost three quarters of people living with hypertension will be in developing countries. (WHO 2013.2). With this alarming estimation, focused attention should also be directed towards pre-hypertension with the aim of mitigating the potential health risks associated with HT (Planas, et al. 2016).

Hypertension represents a major cause of cardiovascular morbidity and mortality worldwide. The world health organization (WHO 2013.2) estimates that approximately 17 million deaths related to cardiovascular complications worldwide every year. Of these, hypertension was responsible for about 9.4 million of these deaths (WHO, 2013.2). Evidence from studies suggests that hypertension has a complex origin with genetic factors contributing to approximately 30 percent of HT prevalence, the remainder originates from environmental influences. Although, many of the environmental influences on blood pressure are known, for example, sodium, obesity and alcohol. A general understanding of the genetic factor is not well documented (Wang & Peng, 2013).

Despite the known benefits to patients in being aware and adoption of the lifestyle modifications necessary in the management of hypertension, adherence is still a problem (Hacihasanoglu, & R., Gözum, S. 2011). Patient education towards the adherence to healthy lifestyle changes and behavior teaching is an effective tool in the management and reduction of blood pressure (BP) in primary health care (Hacihasanoglu & Gözum, 2011).

Traditionally, more emphasis to manage and treat hypertension has been directed towards pharmacological treatment. Nevertheless, that notion is now changing due to the non-effectiveness of many drugs and resistance by some types of hypertension. Early diagnosis is therefore, critical in the management of HT in the primary health care. (Kilic,M., Uzuncakmak, T., & Ede, H. 2016).

In spite of existing cost effective pharmacological treatment, hypertension and some of its related risk factors namely, obesity, high blood lipid and diabetes mellitus, remain uncontrolled in many patients. However, physicians and health care professionals globally need to convey the message clearly to the public that HBP is the first sign that many organs in the body are under attack (Rodriguez, C.J. Swett, C.K. & Agarwal S.K., 2014). The goal is to make people begin to think more carefully about the consequences of unhealthy lifestyle and give preventive measures a real chance by physically and psychologically changing towards a healthy lifestyle. (Rodriguez, et al. 2014).

The theories chosen for this study namely Trans theoretical model of change and health belief model, have been used respectively to help explain the process and stages individuals go through in making lifelong changes. And in describing what factors motivate and discourage people to/from making necessary healthy lifestyle modifications.

1.1 Study problem definition and study Question

Hypertension is a risk factor for cardiovascular disease and remains one of the major causes of death and disability globally, Hypertension affects more than 40 percent of adults with genetics suggesting, adult blacks are at a greater risk than other ethnicities (Dasgupta et al, 2014). In spite of very effective treatment, target blood pressure levels are rarely reached. Sadly, this brings to question the effectiveness of drugs and costs that they come with. This has led to the increased

need by patients to seek other methods of managing hypertension, especially non-pharmacological methods. (Dasgupta et al, 2014).

The purpose of this study is to find out how non-pharmacological methods (lifestyle modifications) have been used in the management of hypertension and how does nurses support patients in achieving a healthy living through lifestyle modifications.

This study intends to answer two research questions:

1. *What are the most common non-pharmacological methods used in the management and treatment of Hypertension? And*
2. *What role does Nurses play in the process of helping patients adapt to healthy ways of living?*

1.2 Aim and benefit of the study

The aim of this study is to explore what are the methods available in different situations of hypertension, and what steps are believed to be more effective in encourage patients into adopting new healthy ways of living. This study includes all types of high blood pressure considered hypertensive and people of all age groups. The study will most likely add to what has already been written about hypertension and how it can be managed through non-pharmacological methods.

2. STUDY BACKGROUND

This chapter focuses on defining and providing crucial information related to areas of focus for this study, consisting of hypertension, non-pharmacological ways of managing hypertension (lifestyle modifications), Health education and what role does the medical practitioners including nurses' play in helping the patients or potential patients adopt healthy ways of living.

2.1 Hypertension

Hypertension is defined as persistent high blood pressure (HBP). It is considered a leading major risk factor for chronic diseases and death (Kilic et al. 2016). A person is considered hypertensive when the systolic BP is over 140 mm Hg and the diastolic is 90 mm Hg and above. Due to its prevalence, HT is one of the most common conditions encountered in primary care (Oza, R & Garcellano, M., 2015). The number of people with hypertension (HT) has risen and stood at 600 million in 1980 to one billion in 2014. Hypertension is renowned globally as the most prevalent non –communicable disease, causing approximately 7.1 million deaths annually (Subramanian, H., Soudarssanane, M.B., Jalalaskshmy, R., Thiruselvakumar, D., Navasakthi, D., Sahai, A. & Saptharishi, 2011). Furthermore, HT is attributed to cause other chronic conditions in individuals if not management effectively. According to research studies, HT is responsible for 16% of ischemic heart disease, 21% of peripheral heart disease, and 24% acute myocardial infarction. (Subramanian et al. 2011).

Moreover, the risk of stroke is four times greater and the risk of myocardial infarction (commonly known as heart attack) two times greater as compared to individuals having normal blood pressure, the higher the blood pressure the higher the risk. Due to its commonality, HT is a major public health risk. According to (Dasgupta et al, 2014) the epidemic is expected to increase considerably in the coming years unless steps are taken to reduce its development. Lifestyle factors, such as physical inactivity, a salt rich diet with high processed and fatty foods, heavy alcohol consumption and tobacco use, are major reasons for this increased health burden. Generally, a person is considered hypertensive when the systolic BP is over 140 mm Hg and the diastolic is ≥ 90 mm Hg (Dasgupta et al, 2014).

The table below shows different stages of blood pressure; from normal to critical hypertensive crisis

Table 1. JNC classification

Blood pressure Category	Systolic mm Hg		Diastolic mm Hg
Normal	Less than 120	and	Less than 80
Prehypertension	120 - 139	or	80 - 89
High blood pressure (hypertension) stage 1	140 - 159	or	90 - 99
High blood pressure (hypertension) stage 2	160 or higher	or	100 or higher
Hypertensive crisis emergency care needed	Higher than 180	or	Higher than 110

Derived from: Joint National committee on Prevention, Detection, evaluation, and Treatment of High Blood Pressure (JNC)

2.2 Lifestyle modifications

Lifestyle modifications, also referred to as non-pharmacologic therapy in academic literature, has a very important role to play in the management of several disease, especially HT. It is the initial treatment or management to many hypertensive patients. Non-pharmacological therapy plays a crucial part in both hypertensive and non-hypertensive people, including those with pre-hypertension. It is believed that lifestyle modifications have the ability to prevent hypertension and more importantly to lower BP and reduce the risk of BP related health complications. (Gupta, R. & Guptha, S. 2010). Lifestyle modifications is basically used as initial treatment in hypertensive individuals before the start of any pharmacological therapy if needed. According to (Gupta, R. & Guptha, S. 2010), Lifestyle modifications considered important in the prevention of hypertension include: reduction in salt intake, moderate alcohol consumption, body weight reduction, increasing potassium intake, increasing physical activity and change in dietary habits.

Despite, preventive measures being put in place to alleviate disease burden and improve general well-being, there is a growing challenge to conventional prevention strategies, resulting from unhealthy lifestyles, such as poor diet and physical inactivity (Gupta, & Guptha, 2010). According to (Stoutenberg, M., Stanzilis, K. & Falcon, A. 2014) lifestyle modification programs is one method that can provide individuals with behavioral skills to sustain long-term healthy changes. Generally, changing long held behaviors is not an easy task. It is believed that, empowering individuals with knowledge on the nature of well-being, diseases and information concerning an individuals' own risk factors in relation with their lifestyle behavior is the first step in prevention of HT (Stoutenberg, M., Stanzilis, K. & Falcon, A. 2014)

2.3 Patient education

Patient education assists in encouraging those who receive health care to adapt willingly to healthy ways and habits, the education needs to be comprehensive and easily understood (Hoving, C., Visser, A., Mullen, P.D. & van Den Borne, B. 2010). Furthermore, the main goal of patient education is to influence behavior change, yet changing long term habits is not an easy task for most people. Nurses and other health care providers usually ask patients to make necessary changes in their lives in order to promote health and prevent diseases. Moreover, patients are nowadays regarded as important partners in their treatment, the more knowledge they have about their diseases and treatment process the better. Patients need to take a more proactive role in their own health care. (Hoving et al 2010).

A lot of emphasis should be put on the social surrounding of the patient with regards to education. The interaction between the patient and the social group has got huge influence when it comes to recuperation. Moreover, family and friends are important since they offer psychological and emotional support to the patient. During health education, a lot of focus is put on the patient in question, the use of most suitable way of learning for the patient must be employed to gain maximum benefits. However, arrangements should be made to in-cooperate the families and friends in the patient education program. (Hoving et al 2010).

Through health education, individuals are motivated and encouraged to modify their lifestyle behaviors hence influencing their attitudes values and beliefs towards the risk factors. According to available data, health education has several aims which includes; conveying information

which influences health and well-being positively and developing skills and acquisition of knowledge concerning behavioral change. (Stoutenberg, M., Stanzilis, K. & Falcon, A. 2014).

2.4 The nurses' role in patient education

Today, nurses assume more responsibility for educating patients and helping them to become responsible for their own health. Nurses are key to providing effective education on a variety of health conditions that can be easily managed at home (Wierdsma et al, 2016). In fact, patient education is one of the most crucial aspects of nursing practice, the teaching is believed to help patients improve their quality of life. Through skills oriented teaching, patients are able to adopt health behaviors and learn how to prevent diseases and promote health. (Stoutenberg, M., Stanzilis, K. & Falcon, A. 2014)

It is the responsibility of nurses to help patients understand how to manage health care problems. According to (Hacihasanoglu & Gözum, 2011), educating patients at all levels of treatment is vital in reducing hospitalization and improving patient quality of life. Through patient teaching, patients are informed of their disease process, the benefits of making lifestyle modifications and potential treatment options (Rujiwatthanakorn, D. Panpakdee, O. Malathum, P. & Tanomsup, S., 2011). Despite, Nurses and other health professional's responsibility in educating patients on matters related to disease management, the burden lies on the patient in achieving the required behavioral changes through self-management and self-determination (Rujiwatthanakorn et al. 2011). Due to the difficulty involved and lack of clear health information, many patients are reluctant to engage in healthy behaviors, leading to lapse in overall active management of HT. The issue of self-management is especially crucial for hypertensive patients, especially when they have the necessary information and fail to take the next step. For most of HT patients, modification of lifestyle behaviors and most importantly, sustaining the healthy behavior is a lifetime task (Rujiwatthanakorn et al. 2011). Changing and creating new meaningful healthy behaviors or life roles is an essential part of HT management.

3. THEORETICAL FRAMEWORK

This chapter intends to explain theories adopted for the study. Prochaska's trans-theoretical model has been selected because of its ability to show how individuals move through stages of change. While, the health belief model (HBM) considers the different factors that motivate and de-motivate individual to either make the change or avoid making the change.

3.1 Trans-theoretical model (TTM)

The TTM of change model, was originally explained by Prochaska and DiClemente, in 1983. The model has been applied as the standard for developing effective interventions to promote behavior change. The model is significant when it comes to describing how people go through the modification of a problem behavior towards the adoption of a positive behavior. TTM may help to explain the difference in hypertension patients' success in a range of psychological and physical health problems. Moreover, the model has been used to explain how patients make healthy decisions in regard to the significant lifestyle changes necessary for a healthy living. The model has been used extensively in behavior modification techniques in healthcare and other fields. (Prochaska, J.O., Redding, A.C. & Evers, E.K. 2013).

According to the TTM theory, behavioral change occurs over time, it is a process involving progress through series of stages. It is believed that the TTM theory is driven by certain assumptions. For example, health care programs should be aimed at assisting patients through the change process, as well as motivating and enhancing the understanding of the advantages of lifestyle changes while at the same time striving in discouraging unhealthy behaviors. (Prochaska, et al., 2013).

The Trans theoretical model of change simplifies the stages an individual goes through in order to achieve the necessary changes for a healthy living. (Glanz et al, 2008)

Table 2. Trans theoretical Model Constructs (TTM)

Constructs	Description
Stages of change	
Pre-contemplation	No intention to take action within the next half year
Contemplation	Intents to take action within the half year
Preparation	Intends to take action within a month and has taken some behavioral steps in this direction
Action	modified definite behavior for less than 6 months
Maintenance	modified definite behavior for more than 6 months
Termination	No temptation to relapse and 100% confidence gained
Processes of Change	
Consciousness raising	Learning and finding new details, ideas, and tips that support the healthy behavior change
Dramatic relief	recognizing the negative emotions (fear, anxiety, and worry) that go along with unhealthy behavioral risk
Self-reevaluation	Actualizing that the behavior change is an important part of one's identity as a person.
Environmental reevaluation	attaining the negative impact of the unhealthy behavior or the positive impact of the healthy behavior on one's immediate social and/or physical environment
Self-liberation	Building a solid commitment to change
Helping relationships	searching for and adopting social support for the healthy behavior adjustment
Counterconditioning	substitution of healthier alternative behaviors and acknowledgement for the unhealthy behavior
Reinforcement management	Rising the benefits for the positive behavior change and reducing the compensation for unhealthy behavior
Stimulus control	Eliminating reminders to engage in the unhealthy behavior and adding reminders to engage in the healthy behavior.
Social liberation	actualizing that the social patterns are changing in the direction of supporting the healthy behavior change

Stages of lifestyle changes, Prochaska, et al., (2013)

3.1.1 Stages of lifestyle changes

Living a healthy life or achieving a healthy weight needs changes. Changing requires a conscious thought that something need to be changed either in the environment or current behaviors believed to be affecting health. According to (Prochaska, et al., 2013), normal and effective change take steps through stages. Therefore, after the development of the change idea, next step is to take action, no change occurs without action. Change can be scary and uncomfortable, so many people rarely take the actions necessary to make changes. However, change can also be wonderful; the outcome of a change can be exiting and encouraging. Lifestyle changes are intentional as opposed to societal, developmental, or imposed changes (Glanz et al, 2008). The below simplified figure shows the stages of change and at what points an individual is more likely to exit and re-enter the change process.

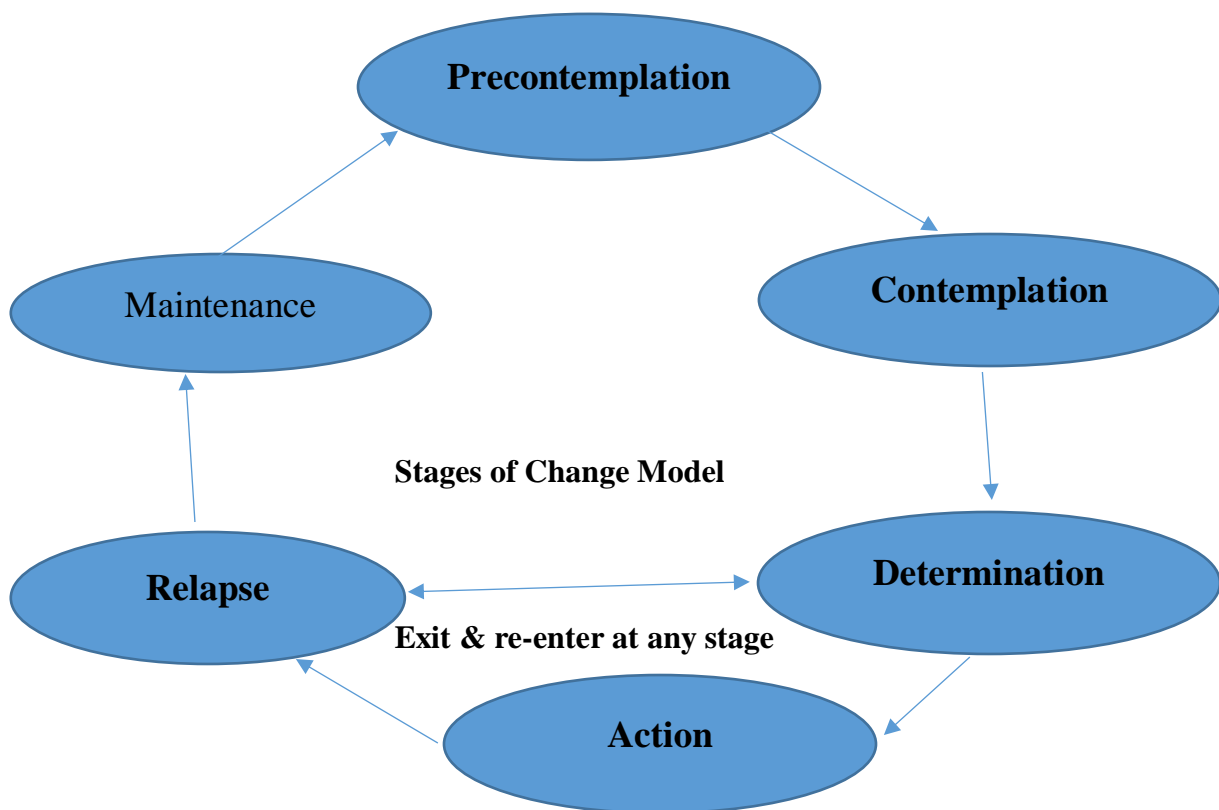


Figure 1. Stages of change model

3.3 The health belief model (HBM)

HBL was developed in the early 1950s by social scientist in the United States public health service. The theory's main goal was to describe what motivates people into making changes to their lifestyles and the demotivating factors. HBM posits that an individual's likelihood of adopting a particular healthy behavior or action is determined by his/her belief in a personal threat from a disease or illness combined with her/his belief in the effectiveness of the recommended healthy behavior or action. (Jones, C.J., Smith, H. & Llewellyn, C. 2014).

The theory derives from two components of health related behavior a) the desire to avoid illness or get well if already ill, and b) the belief that a particular health action will prevent or cure the illness. According to HBM, an individual's course of action depends on his/her perceptions of the benefits and barriers connected to the health behavior. Furthermore, the following perceptions are used by the theory to explain health change behavior: *perceived severity*, the stronger a person believes in the seriousness of the health outcome, the more they are likely to act to prevent or avoid that outcome, severe outcomes such as, death, physical or mental impairment: *Perceived susceptibility*, the model argues that people will be motivated to act if they believe they are susceptible to negative health outcome. Health outcome that are unlikely to affect an individual will not be acted on (Carpenter, C. 2010). Severity and Susceptibility are concerned with a person's perception of negative health outcome. *Perceived benefits* the theory posits that the individual must perceive that the target behavior will provide positive benefits. For example, the intended behavior must be capable of preventing the negative health outcome. Finally, *perceived barriers*, according to the model, if people believe that there are barriers likely to prevent their adoption of the target preventive behavior, they will be unlikely to proceed with the change (Carpenter, C. 2010). For example, the adoption of the behavior may be considered to be too painful, challenging or too expensive.

Despite its relevance in the healthy behavior change, it is suggested that the theory should be integrated with other models that account for the environment and strategies for change. (Glanz et al, 2008

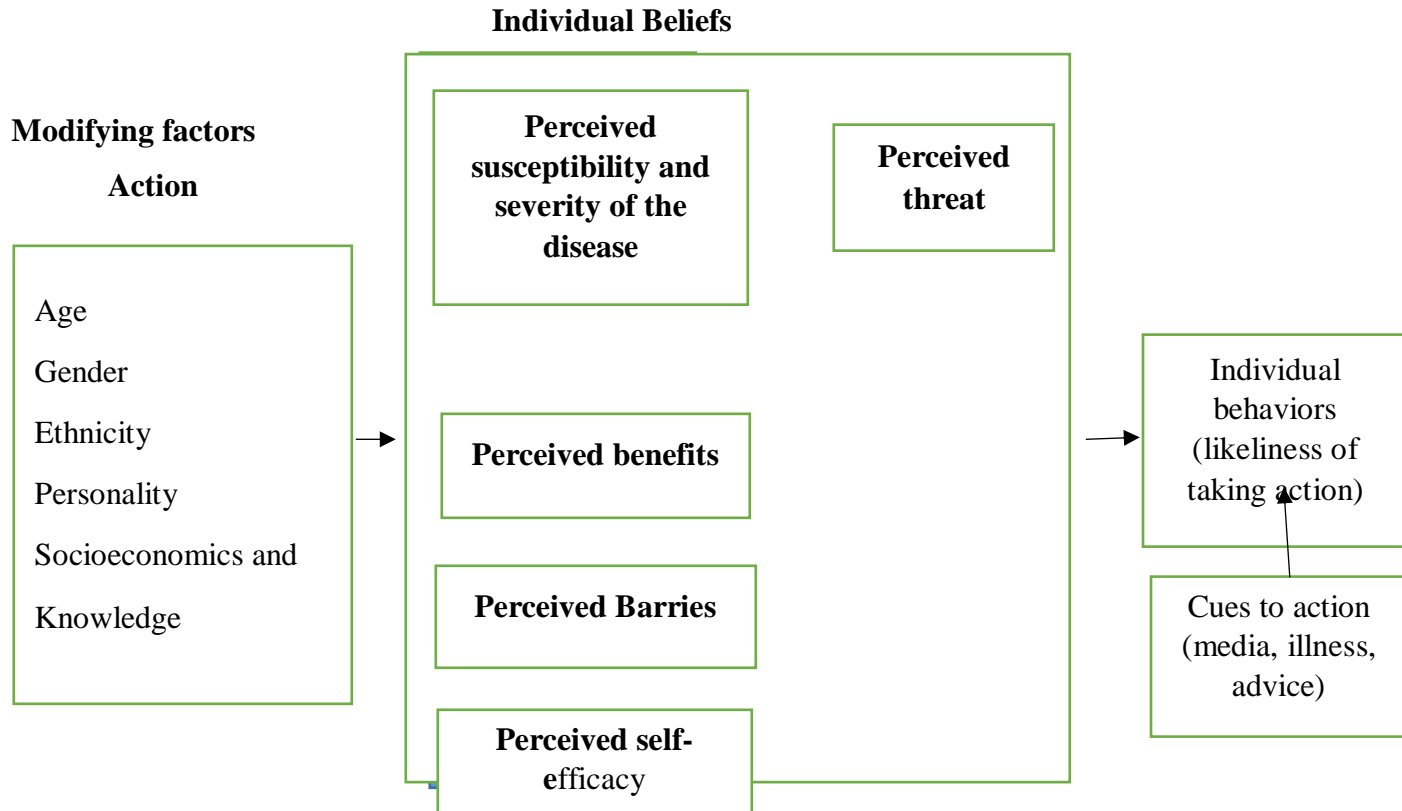


Figure 2. Health Belief Model components and Linkages (Glanz et al, 2008)

4. METHODOLOGY

In this chapter, methodology process for this study is discussed, the process includes data collection and data analysis. This is a systematic literature review study, comprising qualitative content analysis.

The main aim of scientific research is to generate new knowledge through systematic enquiry. Qualitative nursing research is used mainly to provide new insights into the nursing practice through social inquiries, qualitative research is further intended for the description, interpretation and understanding of social phenomena in terms of behaviors and experiences (Gerrish, K & Lacey, A. 2010).

4.1 Ethical consideration

Ethics in nursing research is defined as the act of moral principles which the researcher has to follow during the research to ensure that proper care is taken to protect the subjects under study. According to (Holloway and Kathleen 2017), health research is guided by strict professional rules and codes of conduct that must be adhered to by all researchers.

The authors have identified four principles deemed to emphasize the framework of rules and moral ideas in health research. The principles emphasize essential human rights thought to be important for all health and social care research. Firstly, they have described the principle of autonomy as the emphasis on respect for decision making of persons under study, while the principle of “no maleficence” simply means no harm should be caused during the study, be it to humans or the environment being studied. Additionally, the principle of beneficence emphasizes the provision of benefits and balancing that against risks and costs in the whole processes. It will be illogical to undertake a study where the risks and costs outweigh the benefits inherent therein. Finally, the principle of justice as described refers to the distribution of benefits, risks and cost fairly during the research process. (Holloway and Kathleen 2017). Since this was a literature review study, there was no commitment in observing some of the principle.

Moreover, material used in research must be credible, authentic and represent what it purports to investigate in a genuine way. (Holloway and Kathleen, 2017). Data for this study has been

collected from peer-reviewed articles from the academic search engine FINNA. The collection has been fair and honest, I believe no harm has been done in the process of this study. All ethical issues relating to health care research have been observed fully.

4.2 Literature review

According to (Aveyard, H. 2010) literature review has the main aim of integrating the current level of knowledge relating to the topic under investigation including the study question. Furthermore, it is an objective, extensive summary and analysis of the research and non-research literature on the topic being studied. The review enables a researcher to understand what is happening currently in relation to the topic hence allowing for the development of new perspectives. Literature review comprises the systematic searching of articles, analyses and grouping the contents of the selected articles in order to understand the different aspects discussed and how they relate to one another.

Through literature review, themes and categories are developed and later used in the analysis. It is very important to find the significant parts that best describes the topic, additionally, making sense of the gathered articles' content is vital in the linkage of the material to each other during the analysis. This is necessary in data reduction and thus making the research manageable. After incorporating the literature for the topic, the researcher then needs to develop a study question/s that will guide and focus the review towards the goal of the research. (Aveyard, H. 2010)

According to (Aveyard, H. 2010), the use of primary sources (research articles) is recommended, the use of non-research material should be avoided. The integrity of the review is reflected on how thorough it was and the kind of references used.

4.2.1 Data Search

Searching for data for the topic in review can be done in several ways, the most common source of data is through searching electronic databases. In spite of the availability of data in several databases, it is important that the researcher selects the appropriate databases that contains relevant articles related to the topic in review (Aveyard, 2010). Consequently, the use of

keywords is applied in the search, the keywords are usually related to the study question/s to be answered. According to (Aveyard, 2010) the selection of keywords should be done concisely and in an objective manner as proper combination of the keywords will most likely improve the researcher's chances of getting relevant material during the literature search. After the data collection, the researcher need to review the data critically, making assessments and gaining full understanding of the literature. Basically, at this point the researcher will determine what material is relevant for the study (Aveyard, 2010).

The researcher uses a basic technic in research known as inclusion and exclusion. This is a filtering criteria/technic used mostly in literature reviewed data collection strategy for separating the relevant material from the irrelevant. Moreover, the data for this thesis was collected from electronic databases EBSCO Academic search elite, and CINHL with full text. The keywords combinations were selected precisely with a focus of generating information relevant to the topic. Keywords used in the search included; Hypertension, lifestyle modifications/changes, patient education, healthy eating.

The search was conducted in an organized and comprehensive way. The strategy involved the use of Tritonia's academic search engine FINNA webpage, then logging into Novia University's library student account. From there, it's possible to select "browse databases" where a selection was made of the two relevant databases (CINAHL with full text and EBSCOhost) for nursing and health sciences articles. After this, a filter was set in accordance with the inclusion and exclusion criteria (see table 3), the selected keyword combinations were then pinned into the search areas of the databases. The number of articles generated and how many were used is shown in matrix form. (Refer to the matrix of data search table in appendix 1). The selected/used articles are described in matrix of articles used for analysis. (See appendix 2.)

4.2.2 Inclusion and exclusion

As mentioned above, during the search in each database, the filter was set to exclude articles that were more than 10 years old from publication. The data selection included, scientific research articles, peer reviewed, and full text articles with abstract and exclusively in English. The table below explains the criteria used in article selection.

Table 3. Inclusion and exclusion criteria

Inclusion	Exclusion
Peer reviewed	Non peer reviewed
Scientific (research) articles	Articles with no abstract
Articles with abstract	Non-scientific (research) articles
English published articles	Articles in other languages
Articles published in the last 10 years	More than 10 years old articles
Articles in full text	Articles not in full text

5. DATA ANALYSIS

This chapter intends to describe the process of analyzing data used in this study. Analyzing qualitative data involves the research going from specific examples to the generation of a broad concepts or themes, this is commonly known and induction. Specifically, the researcher is trying to organize and summarize the data collected in categories and themes. Qualitative analysis combines processing and collection of data at the same time. Basically, it is an interactive process that involves moving back and forth. The idea is to identify the commonalities and differences in the data collected, then focusing on the relationships between different parts of the data with the aim of drawing explanatory conclusions clustered around themes. (Gale, K. N., Heath, G., Cameron, E., Rashid, S. & Redwood, S. 2013) Qualitative analysis is highly subjective. Everyone who views the data will have a different perspective of the results of the study.

5.1 Qualitative Content Analysis

Content analysis provides a complete picture and understanding of particular set of activities within a specific context. It refers to means of analyzing, standardizing and comparing, or otherwise systematically transforming already existing data and involves grouping data into categories, constructs and domains (Graneheim, U.H. & Lundman, and B. 2004) Content analysis may be both latent and/or manifest.

Manifest analysis occurs when the researcher surveys the transcript for words, phrases and terms central to the research topic. In other words, it is the evidence that is clearly seen. While latent content refers to the underlying meaning of content such as the interpretation of the text. In order to help the readers understand and know what you are talking about, it is important that the researcher defines the key terms used. Furthermore, the researcher needs to explain what he/she is analyzing (Graneheim, U.H. & Lundman, and B. 2004).

The advantages of using content analysis in qualitative research includes the fact that the analysis is systematic, intuitive and interpretative in its approach. The application of content

analysis also allows the researcher to determine categories inductively and deductively. Lastly, compared to other forms of research, content analysis is significantly practical.

Despite of the advantages, content analysis lack the validity in the analysis. The results of the analysis is rather the subjective opinion of the research. Furthermore, the analysis is limited to published or recorded data thus leaving out other forms of data collection. (Graneheim, U.H. & Lundman, and B. 2004)

6. FINDINGS

The analysis for this study was undertaken with a view of understanding and interpreting the themes in the articles selected. During this process, two categories and seven sub-categories were developed as demonstrated in the table below.

Categories	Sub-Categories
Maintaining a healthy weight	Eating a balanced diet (DASH) Undertaking regular exercise Avoiding processed foods (Foods that boost saturated fats)
Adoption of healthy habits	Avoiding cigarettes or stopping to smoke Moderate alcohol consumption Reducing salt consumption Increasing potassium intake

The results from this studies have indicated that several factors, both controllable and uncontrollable do affect the blood pressure levels. In spite of what people do, some types of hypertension can only be managed through pharmacological methods. The findings included in this analysis are only based on what people can do in order to manage hypertension and exclude all other factors beyond human control. The study has developed two categories from the results, including, maintaining a healthy body weight and adoption of healthy habits. The categories and sub-categories will now be discussed below.

6.1 Maintaining a healthy weight

Being overweight comes with a lot of health related risks, including development of hypertension and diabetes mellitus. Maintaining a healthy weight provides a lot of benefits thus losing some kilos may help lower BP (Muaddi et al, 2016). A little weight loss can bring a lot of health gains. Overweight is described as a person with BMI of 25 or greater. The idea here is to move more, eat less and being smart in food preparation and choices. Increasing the level of physical activity beyond the American heart association (AHA) recommendation of 150 minutes of moderate to intensity aerobics and lowering the number of calories consumed including eating healthy diet. Once the target weight is reached, the individual can determine which dietary and fitness choices work best for maintaining a healthy weight. (Siven et al, 2015 Muaddi et al, 2016). Maintenance of healthy weight can be achieved through vigorous exercise and adoption of healthy eating habits.

6.1.1 Eating a balanced diet (Dietary Approaches to Stop Hypertension, DASH)

Dietary habits are known to influence cardiovascular risks, either through an effect on risk factors such as BP, cholesterol, body weight and diabetes mellitus. According to evidence from studies, the relationship between healthy eating and CVD is based on observational studies. It is believed that adherence to (DASH) dietary approaches to stop Hypertension is one way of reducing BP (Piepoli & Villani, 2017), patients who consumed diet low in saturated fat and high in carbohydrates experienced a significant reduction in blood pressure, even without weight reduction. Compelling studies have shown evidence that DASH-diet has a cardio-protective mechanism for BP lowering (Maddock et al, 2018). According to recent studies, adherence to DASH-type diet has the potential to reduce total cholesterol and LDL-cholesterol levels in blood, apart from its cholesterol lowering effect, DASH diet is also associated with weight loss among adults. The DASH diet emphasizes consumption of *Fruits and Vegetables*, (excluding potatoes) apart from generally being healthy, fruits and vegetable are the main source of potassium, recognized to have a favorable effect on BP. (Piepoli & Villani, 2017). Studies suggest that consumption of a handful of nuts every day has the potential of reducing CVD risks,

nuts boosts high levels of healthy monounsaturated and polyunsaturated fats and very low proportion of saturated fats. Furthermore, *fish* is considered to have protective effect on CVD, eating fish once a week is thought to have a greater effect on reducing CVD than eating none at all. Studies have shown that the public health impact of increased fish consumption is unquestionable. *Low-fat-dairy products* is another dietary feature of DASH. Dairy product especially cheese and unskimmed milk contain high levels of unsaturated fat, that is associated with high cholesterol levels hence elevated BP (Maddock et al, 2018). Other food components include. Whole grains, Poultry without skin and low intake of red meat, salt and sweetened beverages.

While at the same time avoiding or reducing the consumption of: Saturated fats- they have the potential of raising levels of cholesterol in blood. High levels of LDL cholesterol increases the rate of heart diseases and stroke, Red meat and processed meats (high saturated fat levels), Sweets and Sugar containing beverages (associated with increased body weight).

6.1.2 Exercising regularly

Available data suggests that exercise has the potential of lowering blood pressure independently of weight loss. People who adhere to home BP monitoring are more compliant with exercise programs. It is believed that people who usually spend most of their time seated may experience an exaggerated increase in BP during physical activity, and some data suggests that aerobic exercise normalizes such exaggerated response and lowers BP in these individuals. (Nomasoto et al, 2017).

Regular physical activity is related to decreased risk in CVD. Evidence from studies point to positive effects on many risk factors, including hypertension, LDL-cholesterol, non-HDL cholesterol, body weight and type 2 diabetes mellitus. Aerobics exercise is the most talked about in studies as the most effective in BP management (Nomasoto et al, 2017). Studies have shown that, physical exercise is not always the first option for hypertensive individuals when it comes to BP control (Nomasoto et al, 2017). Additionally, physical exercise is associated with improved mental health, reduction in stress, improved appetite and subsequent improvement in quality of life. Moreover, exercise helps with the maintenance of normal body weight.

6.2 Adoption of healthy ways of living

Lifestyle modification is a non- pharmacological treatment for the control of BP in individuals with HTN and implies the adoption of healthy lifestyles (Nomasoto et al. 2017). Different subcategories are discussed below.

6.2.1 Smoking Cessation

Smoking is one of the risk factors for CVD. It effects the general vascular function, according to current studies, cessation of smoking will reduce the risk of developing CVD. Overwhelming evidence suggests that cigarette smoking causes various cardiovascular events and acts synergistically with hypertension to increase the risk of coronary heart disease. Despite smoking being a risk factor, studies have indicated that any independent chronic effect on BP is small. But due to complex interrelations among smoking, alcohol intake, and BMI, smoking is still a major factor in the cause of acute increase in BP. in fact, it is believed that stopping to smoke after a myocardial infarction is potentially the most effective of all preventive measures, (Piepoli and Villani, 2017)

6.2.2 Reducing salt consumption

According to studies, increased consumption of table salt (sodium chloride) has a correlated effect on the blood pressure. (Feng & MacGregor, 2013). As salt intake increases, so does the BP. Evidence includes studies from animal epidemiology, clinical trials and meta-analysis studies of trials. In the DASH (dietary approaches to stop hypertension) sodium trial, it was shown that the consumption between 1.5g-3.3g of salt corresponded to 65-142 mmol/day. Reduced salt intake leads to reduced BP with or without weight loss. In addition to reduced BP, reduced salt intake is also associated with reduced risk of atherosclerotic cardiovascular events. (Appel et al, 2006). In aggregate, it is very important for both hypertensive and non-hypertensive individuals to reduce their salt consumption in order to manage hypertension and its related cardiovascular diseases (CVD) risk (Feng & MacGregor, 2013).

6.2.3 Limiting alcohol consumption

In alcohol consuming population, the amount of alcohol consumed has a significant impact on BP values and hypertension. According to clinical trials, a direct relationship between alcohol intake and BP exists especially when the intake increases above 2 drinks a day. Importantly, evidence shows that the relationship is independent of other BP influences such as age, weight and salt intake. In spite of alcohol being a risk factor for HBP, the consumption of two or less drinks per day is considered healthy for the heart and can reduce coronary heart disease. (Siven et al, 2015). It is believed that decreased alcohol consumption reduces systolic and diastolic BP by 3.3 and 2.0 mm Hg, respectively. (Piepoli and Villani, 2017)

6.2.5 Increasing Potassium intake

The high consumption of potassium is associated with reduced BP. According to evidence from existing studies, there is a significant inverse relationship between potassium intake and BP in both hypertensive and non-hypertensive individuals. (Shine, 2017). Available data suggest that increased potassium intake has beneficial effects on BP in the context of salt intake that is low. The consumption of foods rich in potassium are known to lessen the effects of sodium. Moreover, the more sodium you eat the more sodium you lose through urine. It is believed that potassium reduces BP in blacks than in whites, though the mechanism is not well understood (Shine, 2017). Through the consumption of foods rich in potassium such as fruits and vegetables an individual will be able to increase the level of the mineral in the system thereby achieving a reduction in BP. Potassium is also known to help ease the tension in blood vessels thus reducing the heart's workload (Dye et al, 2015).

6.3 Implications of patient education

Health education has far reaching influences on the individuals' overall behavior. It is therefore aimed at influencing the level of health related knowledge and skills as well as attitudes and beliefs towards lifestyle habits (Ashalata et al 2017). It is also intended to change unhealthy

behavior by identifying and focusing on the risk factors .This will then motivate individuals into changing towards healthy lifestyle. It has been shown that knowledge plays an important role in the control of hypertension and prevention of long term complications (Kim, Y & Kong, and K.A. 2015)

According to a research study conducted in China by Chu-Hong et al (2015), it was demonstrated that patient education through lectures or workshops was more beneficial than education through offering pamphlets and other reading material. Patient educations that work best are believed to be those that put more emphasize on the patient role in the process. Face to face consultations followed by calls to the patients has been indicated to be the most effective form of patient teaching (Xuejiao et al, 2018). Health education has been shown to be effective in situations where the patient has the existing disease/illness or is at risk of developing the disease/illness in this case, hypertension. The second approach is the adoption of preventive measures, in cases whereby the individual is at risk of becoming ill due to unhealthy habits of living (Xuejiao et al, 2018).

7. DISCUSSION

This chapter is committed to the final discussion including exploring different views and recommendations as shown in the study.

7.1 Discussion of results

Genuine lifestyle modification is the first step in the management and treatment of hypertension. Lifestyle is usually based on long-standing behavioral patterns, maintained by the social environment. A lifestyle that encompasses healthy living is believed to be the cornerstone of prevention and should be promoted by all the healthcare providers with collaboration of the family (Kim & Kong, 2015). Environmental factors and individuals at times may hamper the ability to adopt a healthy lifestyle due to barriers and threats. Lifestyle modifications includes intervention in personal behaviors and known risk factors such as lack of physical activity, unhealthy eating habits, overweight, smoking and excessive alcohol consumption. Interventions aimed at lifestyle modification should be lifelong. Social interactions enhances a person's ability to cope with chronic illnesses and adhere to recommended lifestyle changes. It is important to learn about patient's worries, experiences and thoughts, as well as their previous knowledge and conditions of everyday life. When preparing to make lifestyle changes towards a healthy living, it is important to prioritize changes according to their importance to the situation. (Prochaska et al, 2013).

Lifestyle modifications are recommended for all hypertension patients. In spite of the wide use of pharmacological means in managing HT, studies have shown that lifestyle modifications are essential in the long term management of HT, (Oza & Garcellano, 2015). According to Oza & Garcellano, a diet composed of vegetables, fruits and whole grain; sodium intake reduction to less than 2400 mg per day, Can have significant effect on BP reduction. Other dietary non-pharmacological strategies to reduce BP may include: a blend of dietary supplements such as garlic, cocoa, Vitamin C coenzymes Q10, omega 3, fatty acids, and magnesium (Oza and Garcellano, 2015). However, excessive use of supplements should be avoided at all costs, if the nutrients can easily be acquired from eating normal food. Moreover, the adoption of the Dietary Approaches to Stop Hypertension (DASH) emphasizing on the consumption of fruits,

vegetables, nuts and low-fat dairy products, additionally, the diet recommends inclusion of fish and chicken rather than red meat.

Consequently, the management and control of HT is very important and huge benefit for the general public. Lifestyle changes that individuals can make themselves to improve blood pressure is the objective of many patients and health care professionals (Planas, et al. 2016).

According to (Maddock et al, 2018) hypertensive individuals will have higher chances of reducing their BP by changing their eating habits towards a healthy diet. For example, a diet that includes; a serving of vegetables at lunch and dinner, Fruits should be served with meals or consumed as a snack. Dried fruits can be consumed too but it is important to check that there is no added sugar, use of low-fat dairy products, Eating unsalted nuts, raisins, low-fat and fat-free yoghurt, and raw vegetables Eating out may also be avoided or reduced because in most cases you never know what is included in your meal when already cooked (Yuna & Kyoung, 2015). Additionally, increase in fiber, fruits and vegetable has been mentioned in a variety of studies, as having favorable effect in reducing BP. Nevertheless, some dietary factors such as fish oil supplements, fats other than omega-3 fatty acids, calcium, magnesium, carbohydrates and proteins have limited or uncertain effect on the BP level. The same applies to the effects of yoga and stress management on BP reduction (Ashalata et al, 2017). There is substantial evidence from studies on the role of DASH diet in reducing blood pressure, the long-term adherence is the key to success.

Losing weight: according to a body of evidence, emanating from observational and clinical studies, indicates that body weight is positively associated with HBP and hypertension. Weight reduction is known to lower blood pressure. Furthermore, obesity is a risk factor associated with several diseases including diabetes and hypertension. Therefore, losing weight for an hypertensive patient is considered a positive healthy living maneuver. Even though losing weight is usually not easy due to the effort required, it is never impossible to achieve. With commitment everything is possible (Prochaska et al, 2013). avoiding all processed food, and eating more fish and chicken rather than red meat helps keep the cholesterol levels low, especially LDL (Ashalata et al, 2017).

Reducing the salt content of the diet: A high intake of sodium chloride adversely affects BP. consequently, it is the duty of the patient to reduce the amount of salt consumed. In order to reduce the BP level. Evidence points to a significant fall in BP with a long-term modest

reduction of salt intake, especially a significant fall in systolic BP has been noticed in both men and women of all races (Feng & MacGregor, 2013). Furthermore, reduction in salt intake is believed to combat increase in BP during the ageing process. The effects of salt reduction are dose-response related, the greater the reduction in salt intake the greater the fall in systolic BP. In some studies the term “salt sensitivity” has been used to describe the variation of BP response to salt reduction. However, studies suggest that correlation between salt reduction and BP is not race or sex sensitive, but in some studies, evidence has shown that a given reduction in salt intake had a greater fall in BP among individuals of African origin, older people, and those with HTN compared to white people, young individuals and people with normal BP (Feng & MacGregor, 2013).

Taking regular exercise; physical activity of any kind can reduce BP, especially aerobics. Aerobics can take form of any intensive activity, for example, cycling or walking, swimming, jogging. It is recommended to engage in physical activity for at least three to five times a week. The modality enhances functionality with evidence of benefit in lipids and BP control. Despite evidence of exercise and as means of lowering BP, studies have shown that its benefits are usually overlooked simply because of the effort required to succeed. Based on the Health belief theory, even though, the benefits are visible and reachable, the barriers may be considered to be too difficult, expensive or painful by some individuals. (Carpenter, C. 2010). This explains why adoption might be low.

Perceived self-efficacy (a person’s belief in ability of performing a certain task) can either help or hinder an individual’s ability to facilitate own health promoting lifestyle. Recent studies have shown the beneficial role of physical exercise especially aerobics training in the control of BP. Physical inactivity and overweight can trigger hypertension whereas regular physical activity (no matter what type) has been shown to decrease BP and body weight (Nomasoto et al, 2017). For younger and middle age patients, including old but not sickling individuals, maintaining an exercise regimen of 3-4 times a week for at least 40 minutes each session is important in keeping the heart muscles strong. Exercises can be tailored to meet the needs of different age groups and any form of exercise is considered to be better than nothing (Nomasoto et al, 2017).

Consuming alcohol sensibly: the associations between heavy alcohol drinking and CVD such as hypertension, coronary heart disease, stroke and peripheral arterial disease have been studied

exclusively. However, dose and pattern of alcohol consumption seem to influence the effects. It is believed that consumption of low to moderate have the ability to mitigate certain risks and hemostatic factors affecting atherosclerosis and inflammation. Nonetheless, any positive aspects of drinking must be weighed against serious physiological effects (Liang, W. & Chikritzhs, T, 2011). Trials have reported that reduction in alcohol intake can lower blood pressure in hypertensive men who are heavy drinkers. Clinical and preclinical studies have established the association between alcohol and hypertension. Excessive alcohol consumption leads to many other health problems including kidney and liver diseases. Self-perception of health status may related more strongly to changes in drinking status. However, people with undiagnosed chronic conditions, illnesses not directly related to alcohol consumption may subjectively feel well and reluctant to alter their drinking on these basis (Carpenter, C. 2010). This observation is reflected in the theory of “Health belief model” that posits, individuals will only make changes towards healthy living styles if they perceive a threat to their health. Additionally, stopping smoking by hypertensive patients could positively influence blood pressure readings.

Increasing potassium intake: In contrast to sodium chloride intake. Increased Potassium intake is associated with low BP. changing to a diet rich in potassium is recommended rather than the use of supplements. Increased potassium intake is believed to neutralize the excess sodium in the body. It is recommended for all adults with elevated BP but healthy otherwise to increase potassium intake through diet. Despite its favorable effects on BP, people with other conditions such as kidney disease should contact their doctor before venturing into increased potassium intake. Evidence shows that increased potassium intake reduces blood pressure in hypertensive individuals. In fact, higher potassium intake was associated with lower risk for stroke, moreover potassium intake is potentially beneficial to most people with hypertension. (Maddock et al, 2018).

The precursors of health education are that the client or the patient is calling for health-related information so that they may implement them. The aim is to achieve the desired state of health. Evidences shows that there is an assumption that an individual treasures and prioritizes their well-being, therefore it is essential for the healthcare givers to step in and deliver action towards individual needs, in order to prevent further deterioration of health. Further assumption is that health professionals have the fundamental information associated with health and the health care seekers are in need and will eventually gain from their advice. Moreover, it is assumed that the individual will act and make implementation on the information obtain thereby modifying their

lifestyle behaviors. Individualized counselling is the basis for motivation and commitment. Patients should be involved in the decision making, time spent with the individual is crucial in the creation of therapeutic relationship (Dye et al. 2015).

Other complementary and alternative methods that have been used in the management of HTN, such as yoga have been shown in studies to have positive effects on health related quality of life including reducing BP (Wolff et al. 2017). Although, there is no evidence that independent use of yoga is effective in reducing BP. the aim of lifestyle modification is to prevent and treat chronic diseases that are influenced by unhealthy lifestyles. Advice and encouragement should be offered to all individuals. (Piepoli & Villani, 2015). HTN is a major risk for CVD. Therefore, primary prevention and treatment should be paramount in the health care system, along with promotion of healthy lifestyles. (Piepoli & Villani, 2015)

7.2 Discussion of Methodology & Critical review

A systematic qualitative content analysis method has been applied in the analysis of data with the aim of understanding the relationship between different segments. The similarity of the data has led to the formation of themes that expand into categories and sub-categories to accord a common meaning to data.

According to Polit & Beck, (2012), Conducting a qualitative research should follow a fundamental criteria, it is agreed that the study should be ethical, important and clear. This study's importance is evidenced on its theoretical practicality and improvement of the current knowledge. The clarity is emphasized in how concise a research question is described, how data was collected and analyzed and relationship between data and interpretation should be understandable (Thomas & Magilvy, 2011).

The quality of a study requires a systematic and rigorous approach and implementation of the reporting of finding. A systematic review as a study method is credited with the ability to proceed with certain obligation to locate and evaluate data, followed by a prospectively defined aim.

Dependability in qualitative research is important because it establishes the findings as consistent and trustworthy. For example the findings should be supported by the data collected.

Furthermore, the data collection was done consciously without any form of bias on what articles to use, the inclusion and exclusion criteria was set to reflect relevance rather than preference. (Polit & Beck, 2012, 144).

The credibility of this study is reflected by the number of relevant articles selected and analyzed resulting in credible findings. 10 articles were obtained and analyzed for this study. The selection of articles for this study was done with the study questions in mind. Articles selected were of similar nature and relevance, offering the opportunity to gain in-depth understanding of different thoughts.

According to (Polit & Beck, 2012, 146) Transferability refers to whether the findings can be applicable in another contexts. This study has applicability in several settings, a systematic review can be used to study behaviors in all sorts of settings. Moreover, this study has reflected what others researchers have found out in relation to the topic.

Conformability here reflects the relevance of the study to others studies dependability, credibility and transferability. The study has been done in an ethical manner, abiding by the standards of using articles in content analysis study. Care has been taken to avoid any form of bias in the interpretation of data collected. (Polit & Beck, 2012, 144).

Despite of the numerous approaches applicable within qualitative research to cushion against bias and improve the trustworthiness of findings, Qualitative research has often been criticized for lacking soundness and generally regarded as personalized descriptions and interpretations that are subject to researcher bias. Due to its personal nature, it is believed that different researchers will definitely come to different conclusions. In other words, the guarantee for reproducibility is nonexistent. (Thomas & Magilvy, 2011).

In spite of the results emanating from these study, it is not clear whether the findings can be reproduced in a different context by a different researcher. This study reflects a systematic review of resent research articles. However, its authenticity relays on how big the samples used in the articles reviewed represented the whole.

8. CONCLUSION

Hypertension is a chronic disease affecting millions and causing millions of complications every year worldwide. The non-pharmacological methods of controlling hypertension is a very interesting and exciting topic, in fact at the beginning I did not realize just how much has been researched about the topic, until I started searching for data. The data was readily available in the selected databases and easy to understand.

The articles for this study had similar message in regard to the management of hypertension (what needs to be done to curb HBP). Additionally, an elaborations of what habits were the hardest to quit was reflected. People living with hypertension need to make several lifestyle adjustments, not only for treating hypertension but also for the prevention of other related chronic diseases. Lifestyle modifications are interventions intended for the total and lifelong change in habits and behaviors considered unhealthy while at the same time adopting healthy habits. It is important for individuals to learn the best ways and methods that suit them in order to be effective in the change process. Resistance to change is something that requires commitment and encouragement, therefore, social networks and family support are usually of great relevance.

The challenges encountered in lifestyle change process are enormous, the study has shown that many individuals usually struggle giving up long held habits. The balance between psychological, social and mental wellbeing is important in lifestyle modification process. Moreover, the higher the benefits for lifestyle change over the costs therein, the more likely that necessary changes will be adopted. The nurses are known to play a critical role in helping patients make lifelong changes through informative consultations and being there for the patients when they need someone to talk to. In spite of the challenges faced by patients in the process of adopting lifestyle modification, nurses have the potential and knowledge to make a difference in many patient's lives worldwide.

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Appendices

Appendix 1. Matrix of data collection

Date	Database	Search words	Hits	Used
30.04.2018	CINAHL with Full Text	Lifestyle changes	121	2
30.04.2018	EBSCOhost	Lifestyle Modification	31	3
30.04.2018	CINAHL with Full Text	Patient education-hypertension	199	2
30.04.2018	CINAHL with Full Text	Hypertension management	88	1
30.04.2018	CINAHL with Full Text	Hypertension prevention	27	1
30.04.2018	CINAHL with Full Text	Healthy eating	50	1

Appendix 2. Matrix of articles used for the study

Author/s	Title of the article	Journal & Year of publication	Aim of the study	Method	Result
Wenbin Liang & Tanya Chikritzhs	Reduction in alcohol consumption and health status	Addiction 2011 101(1) 71-81	The study's aim was to investigate the association between alcohol consumption and health status.	Cross-sectional survey.	The study showed that, a positive trend was observed, suggesting that people with worse general health status were most likely to reduce their alcohol consumption. Self-perception of health status plays a huge role in the reduction of alcohol consumption. Additionally, a reduction alcohol intake is effective in lowering BP in both hypertensive and normotensives and may help in the prevention in hypertension development. The study further observed, importance of another non-pharmacological prevention and treatment of alcohol-induced hypertension to be physical exercise.
John Shine	Effectiveness of individual teaching programme on	Asian Journal of Nursing Education	To determine the pre-test knowledge and practice on	An evaluative approach with quasi	The results revealed that a majority of patients had moderate

	knowledge and practice regarding lifestyle modification among patients with hypertension in selected urban community at Mangalore	and Research 2017 7(2): 139-146	lifestyle modifications among patients, to evaluate the effectiveness of individual teaching programme in practice on lifestyle modifications and finally to find the connection between lifestyle modification scores and selected demographic variables.	experimental non-equivalent pre-test post-test was adopted.	knowledge on lifestyle modification in HTN prior to the test. The study showed that individual teaching on lifestyle modification was effective in improving knowledge and practice. The study further revealed that patients benefited from individual teaching due to its simplicity, comprehensively and understandability. The study concluded that, it is important for HTN patients to know and practice various lifestyle modification in order to prevent complications.
Cheryl J. Dye, Joel E. Williams & Janet Hoffman Evatt	Improving Hypertension Self-Management with Community Health Coaches	Health Promotion Practice 2015 16(2), 271-281	To improve HTN health management among rural residents older than 60 years through education and support offered by health coaches	Quantitative study	The study showed that Hypertension-related knowledge increased significantly. Except for tobacco use, there were positive trends in the readiness to change from the cognitive stages towards behavioral action stages. For example, significant changes were observed in readiness to physical activity, practice good eating habits, to lose weight or maintain a healthy

					weight and to live an overall healthy lifestyle. Additionally, significant changes were observed in self-reported consumption of fruits and vegetables, efforts to eat low-fat foods, to cope with life stress. Finally, clinical measures changed towards the appropriate direction especially changes in systolic BP, weight and fasting glucose were statistically significant.
Massimo F. Piepoli & Giovanni Q. Villani	Lifestyle modification in secondary prevention	European Journal of Preventive Cardiology 2017. 24(35) 101-107	To identify risk factors and goals of a healthy lifestyle	Meta-analysis study	The review indicated that physical activity has a positive effect on many risk factors. Including HTN, Low-density Lipoprotein (LDL) cholesterol and non-high-density lipoproteins (HDL) cholesterol and body weight. Aerobics has been identified as the most effective form of physical activity and has been recommended as a way of reducing BP. The consumption of fruits and vegetables has been shown to have a protective effect on CVD.
Yuna Kim & Kyoung Ae Kong	Do hypertensive individuals who are aware	Public Library of Science	To assess adherence to lifestyle recommendati	quantitative study	The study showed that adoption of DASH type diet had the lowest

	of their disease follow lifestyle recommendations better than those who are not aware?	(PLOS one) 2015 10(8): 1-13	ons by individuals who are aware of their hypertension and to identify characteristics associated with non-adherence.		adoption rate among the study subjects, likewise, the recommendation to increase potassium intake was also low. Furthermore the compliance to the recommended salt intake reduction generated the next lowest level of adherence. Recommendation to moderate alcohol consumption, cease smoking, maintaining a healthy body weight and engagement in physical activity garnered the highest level of compliance. Generally, there was slight difference in adherence among the two groups but not significant enough to draw lines.
Muaddi Alharbi, Robyn Gallagher, Ann, Kirkness, David Sibbritt & Geoffrey Tofler	Long-term outcomes from Healthy eating and exercise lifestyle for overweight people with heart disease and diabetes	European Journal of Cardiovascular Nursing 2016 Feb, 15(1):91-99.	To determine whether positive weight, BMI, waist and exercise duration outcomes were sustained in long term(in this case, 1 year) and to identify the independent predictors of these outcomes at 4 and 12 months	Longitudinal research design.	The study showed that changes in weight (BMI) were statistically significant at 4 months with a reduction of 2.2kg. Moreover, at 12 months the participants maintained a significant decrease in body weight, waist circumference and BMI. Overall, 25% of the participants achieved a

					clinically significant weight loss of ($\geq 5\%$) at 12 months evaluation. The wait reduction was achieved through daily walks and exercising for a total of 3.5 hours weekly. Furthermore, the study identified time, gender, self-efficacy and depressive symptoms as statistically significant contributors to BMI, and Waist circumference.
Jane Maddock, Nida Ziauddeen, Gina L. Ambrosini, Andrew Wong, Rebecca Hardy & Sumantra Ray.	Adherence to a dietary approaches to stop hypertension (DASH)-type diet over the life course and associated vascular function: Study based on the MRC 1946 British birth cohort.	British Journal of Nutrition 2018 119(5) 581-589	The aim of this study was to examine whether long-term adherence to a DASH-type diet is associated with conventional cardiovascular CV-risk factors and vascular function.	Longitudinal observational study	The study showed that long-term association with the DASH-type diet reduced CVD risk. Additionally the diet was considered to improve the levels of HDL-cholesterol. it was reported that consumption of DASH- diet had a positive effect on the vascular function hence, improved BP.
Feng J. He, Jiafu Li and Graham A. MacGregor	Effect of longer term modest salt reduction on blood pressure: Cochrane systematic review and meta-analysis of randomized trials.	British Medical Journal, 2013 346 (1-15)	To determine the effects of longer term modest salt reduction on blood pressure, hormones and lipids	Systemic review and meta-analysis	The study showed that a longer term modest reduction in salt intake of 4.44/day on average, had a significant and important reduction in BP in people with both raised and normal BP. The rated decreased by

					5/3mm Hg in hypertensive and 2/1 mm Hg in non-hypertensive individuals. Furthermore, according to the study results, a reduction in salt intake is likely to counteract the rise of BP with age, in addition to the blood.
Xuejiao Zhu, Frances Kam Yuet Wong & Candy Lai Har Wu	Development and evaluation of a nurse-led hypertension management model: A randomized controlled trial	International journal of Nursing studies 2018 (77) 171-178	The main goal of the study was to establish a nurse-led hypertension management model and to test its effectiveness at the community level.	Randomized controlled trial.	There was a significant reduction in systolic blood pressure (SBP) in patients under study. Likewise a more significant drop in diastolic BP was observed. The role of nurses in non-pharmacological management/treatment was established and recognized under this study
Nomasonto Magobe, Marie Poggenpoel & Chris Myburgh	Experience of patients with hypertension at primary health care in facilitating own lifestyle change of regular physical exercise	Curationis 2017 40(1): 1-8	The aim of these study was to present the experience of patients with hypertension regarding the facilitation of their own health promoting lifestyle change measures of regular physical exercise.	A qualitative, exploratory , descriptive and contextual research design.	The study showed that most patients experienced poor self-care due to poor self-efficacy. This was demonstrated by not engaging in regular physical exercise thus leading to uncontrolled BP and other CVD. Additionally the study confirmed the need to educate, motivate and empower patients with the necessary knowledge in facilitating their

					own regular physical exercise.
W. Ashalata Devi, Manamaya Rana, & Dibya Sharma	Knowledge on hypertension and perception related to lifestyle behavior modification of hypertensive clients	International journal of Nursing Education 2017 9(4) 152-157	To assess knowledge level about risk factors, symptoms and complications of hypertension and levels of perception related to lifestyle behavior modifications of hypertensive patients.	A descriptive cross sectional study.	The study showed that knowledge among patients regarding HTN risks factors stood at 64%, While rough knowledge regarding the symptoms and complications accounted for the smallest percentage in the study, standing at 59.5%. Additionally, results showed that 96.1 % of patients had high level of perception regarding lifestyle behavior modification. The variables investigated in the study included: restriction in salt intake. Eating healthy diets, consuming vegetables daily, exercise, and consuming low fat diet.