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**Lifestyle modification in prevention of hypertension:**
Patient empowerment

Thesis

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SeAMK

Degree programme in Nursing
Hypertension also known as high blood pressure is the elevation of pressure in the arteries. Hypertension affects about 40% adults worldwide and it's known to be risk factors such as aging, lifestyle and medications. Lifestyle modification is the greatest tool in prevention of hypertension.

The aim of this thesis is to understand the effectiveness of lifestyle modification in prevention of hypertension. The purpose of this thesis is to come up with an overall review of lifestyle modification that can be applied in prevention of hypertension. The focus is on lifestyle modification and patient empowerment through guidance and counseling.

The research questions of this thesis were: How is lifestyle modification effective in prevention of hypertension? How healthcare professionals can empower patients in their own self-care?

Data collection method was literature review. Inclusion and exclusion criteria was used after the key were identified, databases: Cinhall with full text, Academic search elite Ebsco (host) and Sage journals. A total of 12 articles were used Inductive content analysis was used. During analysis process, several themes were identified. These themes were divided into categories and sub categories

The results of this thesis shows that risk factors such as alcohol consumption, smoking, physical inactivity and unhealthy diet are modifiable. The results suggested that empowerment is important in motivating towards the behavior change. Lifestyle modification is the main approach in prevention of hypertension. Healthcare professionals plays an important role in promoting and facilitating behavior change.

Keywords: hypertension, prevention, lifestyle modification and patient education
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<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACPM</td>
<td>American College of Preventive Medicine</td>
</tr>
<tr>
<td>AHRQ</td>
<td>Agency for Health Research and Quality</td>
</tr>
<tr>
<td>AHA</td>
<td>American Heart Association</td>
</tr>
<tr>
<td>CHNC</td>
<td>Community Health Nurses of Canada</td>
</tr>
<tr>
<td>CKD</td>
<td>Chronic Kidney Disease</td>
</tr>
<tr>
<td>DASH</td>
<td>Dietary Approaches to Stop Hypertension</td>
</tr>
<tr>
<td>DM</td>
<td>Diabetes Mellitus</td>
</tr>
<tr>
<td>ESC</td>
<td>European Society of Cardiology</td>
</tr>
<tr>
<td>ESH</td>
<td>European Society of Hypertension</td>
</tr>
<tr>
<td>JNC</td>
<td>Joint National Committee</td>
</tr>
<tr>
<td>NICE</td>
<td>National Institute for Health and Care Excellence</td>
</tr>
<tr>
<td>ONC</td>
<td>Office of National Coordination for Health Information Technology</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
</tr>
</tbody>
</table>
1 INTRODUCTION

This thesis focuses on lifestyle modification and patient empowerment on prevention of hypertension. Hypertension affects about 40% adults worldwide and it’s known to be one of cardiovascular risk factors. Blood pressure tends to elevate due to several risk factors such as aging, lifestyle and medications. Lifestyle modification is the greatest tool in prevention of hypertension. (National Institute for Health and Care Excellence (NICE 2011.)

Lifestyle choices and medications are the causes for poor blood pressure control and healthcare professionals play a vital role in educating patients about risk factors, signs and symptoms of hypertension. High blood pressure is a recognized risk factor for coronary heart disease and stroke hence it’s important for healthcare professionals and nurses to give proper guidance to hypertensive patients (Kearney, Whelton, Reynolds, Muntner, Whelton & He 2005.)

In this study, the authors want to find a better health care for hypertensive patients. The focus is more on supporting hypertensive patients and educating them on the lifestyle modifications necessary towards their well being. The healthcare workers and nurses are recognized as engineers for prevention of hypertension. American Heart Association (2014) recommends frequent blood pressure checkups. Hypertension is a symptomless condition hence referred to as “silent killer”. Krothe and Clendon (2006) states that, the risk factors of hypertension can be categorized into two parts, modifiable and unmodifiable risk factors. The authors focuses more on modifiable factors which include, physical activities, diet, excess sodium intake, smoking, obesity, excess alcohol consumption and being overweight.

According to Ho and Yan (2010), patient education is important in order to meet expected goals for the patient. Therefore nurses need to be educated and have proper knowledge on how to educate the patients. Patient education is greatly important for both nurses and patients. The patients get proper knowledge and understanding on the best way to have good healthy life while on the other hand; nurses promote health and feel a sense of satisfaction for a job well done.
2 HYPERTENSION

2.1 Definition and stages of hypertension

Hypertension also known as high blood pressure is the elevation of pressure in the arteries (World Health Organization (WHO). This makes the heart to work twice as much to circulate blood through the vessels. High blood pressure has elevated readings of systolic, diastolic or both readings. Systolic blood pressure occurs when the heart is contracting and diastolic blood pressure is when the heart is relaxing. Systolic blood pressure is highly known to the elderly people while diastolic is mostly common to the younger age (NICE 2011[ref.27 Feb 2015].) Blood pressure is measured in two measurements; systolic when the heart muscle contracts and diastolic when the heart relaxes between beats (The seventh report of the Joint National committee on prevention, detection, evaluation and treatment of high blood pressure (JNC) 2004). Hypertension being one of the main cardiovascular risk factors, affects about 40% of adults across the world (Petkeviciene 2014).

Hypertension has three stages. Stage one can be defined as systolic blood pressure of 140 mmHg and Diastolic blood pressure of 90 mmHg or higher. Stage two is defined as 160/100mmHg or higher. Stage three is considered as severe hypertension and is defined when systolic blood pressure is greater than 180mmHg and diastolic blood pressure is greater than or equal to 110 mmHg (NICE 2011) [ref. 27 Feb 2015].

2.2 Risk factors of hypertension

Studies show that hypertension in adulthood regenerates from childhood obesity or overweight and a genitive family history of hypertension (Petkeviciene et al 2014). According to Weir (2005), hypertension’s major risk factors are; high sodium intake, low fruits and vegetable intake, less physical activity, high alcohol consumption, smoking and low potassium intake.
According to JNC (2004), the risk factors of hypertension are divided into two groups, the modifiable and unmodifiable risk factors. The unmodifiable factors are those that are beyond human control. They include gender, age and family history. On the other hand, the modifiable risk factors are determined by lifestyle choice such as poor diet, excess weight gain, excess alcohol intake and smoking (Krothe & Clendon 2006).

2.3 Causes of hypertension

High blood pressure is caused by unknown and known causes. There are two types of high blood pressure, primary hypertension and secondary hypertension. Primary blood pressure, also known as essential hypertension is when the cause is unknown. It might result from unhealthy lifestyle and aging. About 95% cases of hypertension diagnosed are essential. (Eskridge 2010.)

Secondary hypertension is caused by medications or any health problem such as diabetes mellitus (DM) and chronic kidney disease (CKD). About 5% of hypertensive patients are diagnosed with secondary hypertension (Eskridge 2010 56.) Hypertension is also caused by identifiable causes which include chronic kidney diseases, sleep apnea, diabetes mellitus, thyroid disease and reno-vascular hypertension (JNC. 2004).

2.4 Signs and Symptoms of hypertension

According to American Heart Association (2014), hypertension is a symptomless condition unless in severe cases. It is often referred to as “silent killer” and that’s why it is recommended to measure blood pressure regularly. Usually, hypertensive symptoms maybe experienced in severe cases “systolic of 180mmHg and diastolic of 110mmHg”. This symptoms are; severe headaches, anxiety, nose bleeding and shortness of breath. Weir (2005) indicates that healthy lifestyle habits are best way to control high blood pressure and medicines if needed.
2.5 Measurements of blood pressure

To measure blood pressure, the patient should be seating down, relaxed and quiet. The arm should be stretched and in a supported position. The cuff size should be the right size for patient’s arm. Also the health care nurse should make sure that the monitoring device is accurate (NICE 2011.) Patients with arrhythmias like atrial fibrillations, blood pressure should be measured many times for accuracy (European society of hypertension and European society of cardiology ESH & ESC 2013).

In order to confirm that a patient has hypertension, blood pressure is measured from both hands. Different blood pressure monitoring devices should be used for accuracy. With blood pressure of 140/90 mmHg a second measurement is taken with ambulatory blood pressure monitoring (ABPM) for confirmation. Immediate treatment for persons with (BP 180/110 mmHg) severe hypertension is advised. (NICE 2011.)
3 LIFESTYLE MODIFICATION

Lifestyle modification also known as non-pharmacological therapy is the cornerstone of helping out hypertensive patients to attain lifestyle behaviors that are healthy (Cakir & Pinar 2006). Weir (2005) recommends a healthier lifestyle to minimize hypertension risk with a combination of antihypertensive drugs. Lifestyle change is an effective way of managing high blood pressure (Bunker 2014). It is also said that lifestyle change may delay hypertension and even prevent it (Petkeviciene et al 2014).

The lifestyle factors that are recommended for reducing hypertension include: losing weight, regular physical exercise, moderate alcohol consumption, a change in diet and reduced sodium intake (Eskridge 2010). The dietary approaches to stop hypertension (DASH) diet recommends lots of fruits and vegetables, low-fat dairy products, low in total fat, saturated fat and cholesterol (Elmer et al 2006). DASH diet has produced effective results in lowering hypertension (Eskridge 2010).

Healthy lifestyle is critical for prevention of high blood pressure and a great way to manage hypertension for people with high blood pressure. Maintenance of normal body weight plays a large role in prevention and reduction of high blood pressure. (JNC 2004.) According ESH & ESC (2013), excess body weight has a major impact on high blood pressure hence losing weight is an essential way of managing and preventing high blood pressure. Also DASH diet and exercise promotes reduction of high blood pressure. For patients who cannot maintain normal body weight, losing at least 4.5kg is a fair start towards lowering high blood pressure (JNC 2004). Being overweight not only does it elevate blood pressure, it also increase risks of having diabetes. Proper weight loss plan includes exercises and good nutrition. Therefore it is important to get a 30 minute workout at least 5 days a week. (ESH & ESC 2013.)

Excess salt intake is associated with elevation of high blood pressure. Studies have shown that the amount of salt intake in general is 9 – 12 g per day. Lowering it to 5g per day will have effective benefits to hypertensive patients. Salt restriction is also recommended to diabetes patients and chronic kidney disease (CKD) patients (ESH & ESC 2013.) JNC (2004) indicates that it is important to cut down on alcohol consumption and smoking. Smoking may be hard to quit but with proper guidance from
health care personnel’s, it can be done easily. Table 1 helps clarify the lifestyle modifications necessary to prevent and manage hypertension.

Table 1 Lifestyle modification to prevent and manage hypertension. According to Chobanian et al 2004.

<table>
<thead>
<tr>
<th>Modification</th>
<th>Recommendation</th>
<th>Approximately SBP reduction (Range)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight reduction</td>
<td>Maintain normal body weight (BMI 18.5-24.9 kg/m)</td>
<td>5–20 mmHg/10kg&lt;sup&gt;92,93&lt;/sup&gt;</td>
</tr>
<tr>
<td>Adapt DASH eating plan</td>
<td>Consume diet rich in fruits, vegetables and low fat dairy products.</td>
<td>8–14 mmHg&lt;sup&gt;94,95&lt;/sup&gt;</td>
</tr>
<tr>
<td>Dietary sodium reduction</td>
<td>Reduce dietary sodium intake to not more than 100 mmol per day</td>
<td>2–8 mmHg&lt;sup&gt;94-96&lt;/sup&gt;</td>
</tr>
<tr>
<td>Physical activity</td>
<td>Engage in regular aerobic physical activity such as brisk walking (at least 30 min per day).</td>
<td>4–9 mmHg&lt;sup&gt;97-98&lt;/sup&gt;</td>
</tr>
<tr>
<td>Moderation of alcohol consumption</td>
<td>Limit consumption to no more than consumption 2 drinks per day in most men, and to no more than 1 drink per day in women and lighter weight persons</td>
<td>2–4 mmHg&lt;sup&gt;99&lt;/sup&gt;</td>
</tr>
</tbody>
</table>
4 PREVENTION OF HYPERTENSION

Prevention can be defined as “measures taken to avoid the introduction of a disease or infection into areas which does not exist already, and improve the resistance of the population and reduce the chances of infection spreading when the disease already exists in the population”. (Medical dictionary 16 may 2015). Cardiovascular diseases including hypertension are the major cause of fatalities in America (Go, Glenn, Chertow, Dongjie & McCulloch 2004). The predisposing factors to hypertension include habits which can be modified and those which cannot be changed. Behaviors like smoking, alcoholism and inadequate physical exercise are the major risks which are associated with development of hypertension. On the other hand, risk factors like genetics, age gender and race are non-preventable. Individuals with prehypertension stands at high chances of developing hypertension, therefore, a lot of emphasis should be put in primary prevention. This will lower morbidity and the mortality rate associated with the hypertension (JNC 2004.)

American medical association (2010) points out that for effective prevention of hypertension to be achieved, mechanisms should be laid down whereby emphasis should be but on the community, groups and individuals who stand at high risk of developing hypertension. For instance, community based strategies includes public health approach.
5 PATIENT EDUCATION

According to Oxford English dictionary [ref. 25 Feb 2015], education is defined as “a process of giving or receiving systematic instructions learning experience using a combination of methods such as teaching, counselling and behavior change techniques which influences patients’ know how and health lifestyle”. Patient education helps in encouraging those who receive health care to adapt willingly to skills and habits that are deemed good for health (Hoving, Visser, Mullen & vanclenborne 2010).

5.1 History of patient education

During 1980s, laws on patient rights were increasingly being emphasized and a lot of organizations were advocating on implementation. This gave way for further progressive development in patient education. Legislations concerning patients’ right to be informed about the treatment modalities, options and the prognosis were developed in many countries (Deccache & Aujoulat 2001.) as cited in Hoving et al 2010. During this period, the sick could actively participate in the care thus improving their general health as a result of the health messages from the care givers. (Hoving et al 2010).

In 1990s, patients were regarded as important partners in the treatment. Their hopes and choices were included in the overall treatment plan. Before the patient could be discharged home, they were equipped with knowledge and practical skills on how to cope at home. Emphases were put on the importance of equal ground between the care giver and the patient during health education. Moreover, the family and the friends of the sick were considered of great help during treatment and therefore they were included in patient education and treatment plan. In addition, electronic materials and information become also available and the patients could access them for example through internet. This helped in reducing the need of caregiver visits thus increasing convenience (Hoving et al 2010.) In 21st century, a lot has been studied about patient education. There is need for communication between the care giver and the patient. The stage was set for research and communication. There is a lot
of emphasis on the care givers to make implementations on the guidelines regarding patient education (Hoving et al 2010.)

5.2 Future trends of patient education

As per the past trends, it is evident that patient education is evolving gradually, and due to this development, more advancement is expected to emerge in the future. These advancements can be achieved through; training of caregivers, acknowledgment of social surroundings, and the impact of technology.

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. Furthermore, family and friends are important since they offer psychological and emotional support to the patient. During health education, a lot of focus will be put on the patient in question. However, arrangements needs to be made in order to in co-operate the families and friends also in the patient education program. (Hoving et al 2010.)

Technology is playing a crucial role in patient education and guidance currently. Internet, smart phones and computers are being utilized to convey the health information to the patients. This platform also will enable the healthcare providers to obtain the clients health status without having any contact. (Head, Studts, Bumpus, Gregg, Wilson & keeney 2009.) This advancement in technology is expected to continue and it will boost patient literacy level and also it will make it more convenient for both client and provider as it will foster the transfer of health information more easily (Hoving et al 2010). In any case, e-services should be used with care. The health care professionals need to use and recommend the reliable sources which will in turn give correct and relevant information to the clients. (Amhad, Hudak, Bercovitz, Holleberg & Levinson 2006.)
5.3 Health education

Health education can be defined as an activity that aims at empowering individuals with knowledge on the nature of well-being/disease and that of individuals own risk factors in relation with their lifestyle behavior. Through health education, individuals are motivated and encouraged to modify their behaviors hence influencing their attitudes values and beliefs towards the risk factors. Data reveals that, health education has several aims which includes; conveying information which influences health positively and developing skills and acquisition of knowledge concerning behavior change. (Whithead 2004.)

5.3.1 Precursors of health education

The precursors of health education are that the client or the patient is calling for health-related information so that they may implement them with the aim of achieving the desired state of health. Evidences shows that that there is an assumption that an individual treasures and prioritizes their wellbeing therefore it is imperative 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. (Whithead 2004.)

5.3.2 Indications of patient education

Health education has the 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. It is also intended to change unhealthy behavior by identifying and focusing on the risk factors. This will then lead to individuals changing their unhealthy lifestyle. Due to these aims, health education
is needed in an event whereby the client has the existing disease/illness. The second approach is preventive in nature whereby the individual is at risk of becoming ill due to unhealthy habits of living. (Whitehead 2004.)
6 GOALS, PURPOSE AND THE RESEARCH QUESTIONS

The goals of this thesis are to find out how effective lifestyle modification is in prevention of hypertension. Also how patient empowerment is important to patient in becoming responsible for their own self-care. The purpose of is to come up with an overall review of lifestyle modification that can be applied in prevention of hypertension. The focus is on lifestyle modification and patient empowerment through guidance and counseling. The formulated research questions are as follows:

1. How is lifestyle modification effective in prevention of hypertension?

2. How can healthcare professionals empower patients to be responsible in their own self-care?
7 LITERATURE REVIEW

Literature review can be defined as “an objective, exhaustive summary and critical analysis of the relevant available and non-research literature on the topic being studied”. Its aim is to enlighten the reviewer with the current information on the field of study. For the literature to be effective, the reviewer should gather information from several reliable sources. It should have the minimal number of biases as possible. It is also imperative to use the terms accurately, the search and selection criteria should be outlined clearly. Literature review is a process which involves several steps that are followed in a systematic manner. (Cronin, Ryan, & Coughlan 2008.)

7.1 Selecting a review topic

First the researcher has to select a topic to be studied. The selected topic of review should be narrow and straight to a specific field of interest. This will avoid chances of generating huge amounts of data thus making the research manageable and feasible. (Cronin, Ryan, & Coughlan 2008.)

7.2 Formulating a research question

After selecting a topic, the reviewer needs to formulate a research question. This will help in addressing the topic or rather it will offer direction and guidelines during the literature search process. It is crucial to formulate a clear and simple question which will specifically seek answers to specific areas thus keeping the review on focus. The question also should be framed in a neutral manner to avoid bias or leading answers. (Aveyage 2010.)

7.3 Literature search

The next step after having chosen the review topic is the literature searching. In this step, several databases can be employed. Electronic databases are considered
ideal since large quantities of data can be obtained. (Younger 2004.) Different databases covers deferent fields. Therefore, it is important for a reviewer to select the appropriate database for the topic. (Cronin, Ryan, & Coughlan 2008.) The reviewer needs to identify and pay more attention on the literature that will address the review question. In doing this, the reviewer will be able to manage the data thus avoiding confusion. (Aveyard 2010.) For the easy retrieval of the literature, keywords are used. These words are chosen in a careful and a more objective manner in order to yield the desired information. (Elly & Scot 2007.) The combination of keywords during search process will help in generating more information (Hek & Moule 2006). After the literature has been obtained, the reviewer needs to critically assess the data. This will help to have deep understanding of the literature. This critical appraisal enables the reviewer to determine relevance of the review and also to gauge whether it will add enough weight in the review. Therefore, the reviewer needs to go through the literature several times to foster understanding. (Aveyard 2010.)

7.4 Data collection of this thesis

Data collection is getting together important and useful information in support of the research task. The method used for collecting data was literature review. First the authors began by determining the research topic. Then the materials to be used were selected through the inclusion and exclusion method. Data was extracted from scientific articles- databases Cinahl with full text, Academic search Elite (ebsco host) and Sage Journal. Also data was collected from journals and e-books. The keywords in use were hypertension, prevention, lifestyle modification and patient education.

7.4.1 Inclusion and Exclusion criteria

In order to get the wanted results, the search was filtered by inclusion and exclusion criteria (see table 2). Data was restricted to full text articles, English language, published articles for maximum of 10 years and, scientific articles.
### Table 2 Inclusion and Exclusion Criteria used in this thesis

<table>
<thead>
<tr>
<th>Inclusion</th>
<th>Exclusion</th>
</tr>
</thead>
<tbody>
<tr>
<td>Articles in English language only</td>
<td>Articles in other languages</td>
</tr>
<tr>
<td>Articles from year 2004 or later</td>
<td>Articles older than 2004</td>
</tr>
<tr>
<td>Full text articles</td>
<td>Articles without full text</td>
</tr>
<tr>
<td>Scientific articles</td>
<td>Non-scientific articles</td>
</tr>
<tr>
<td>Published literature only</td>
<td>Unpublished literature</td>
</tr>
<tr>
<td>Articles with abstract</td>
<td>Articles without abstract</td>
</tr>
</tbody>
</table>

#### 7.4.2 Keywords

Several keywords were used in search of the wanted materials. The words in use were hypertension, prevention, lifestyle modification and patient education.

**Hypertension:** “Hypertension, also referred to as high blood pressure, is a condition in which the arteries have persistently elevated blood pressure. Every time the human heart beats, it pumps blood to the whole body through the arteries”. (Medical news today (MNT) 2015.)

**Prevention:** prevention can be defined in three stages. First there is primary prevention, which is the act of preventing disease from occurring. It mainly work well with proper health promotion such as good nutrition and physical exercises before the disease occurs. Secondly there is secondary prevention. It is minimization of progressive disease that has been detected. This is done by measuring blood pressure, mammograms and taking pap smears. Thirdly there is tertiary prevention. This is the kind of prevention where by an existing disease is detected and controlled before it steadily develops. This can be done by the use of drugs or proper diet and physical activity. (Community Health Nurses of Canada (CHNC) 2012.)
**Lifestyle modification:** Lifestyle modification also known as non-pharmacological therapy is the cornerstone of helping out hypertensive patients to attain lifestyle behaviors that are healthy (Cakir & Pinar 2006).

**Patient education:** “It is an element of patient empowerment, achieved by teaching patients about illnesses/ conditions encouraging greater involvement in decision related to ongoing care and treatment” (Medical dictionary [Ref 6.may.2015]).

### 7.4.3 Data base results.

To get the relevant articles for the search, various searches were done using database Cinahl with full text, academic search Elite Ebsco and Sage Journals. In order to get the reliable articles to be used, an inclusion and exclusion criterion was used.

**Data search from Cinahl with full text**

Cinahl full text database was used to find required search. The required criteria was marked before the search, for instance, English language, full text and published after year 2004. Keywords used for the search were hypertension, prevention and patient education. Articles found were 40 and they were filtered in 5 articles after going through titles, abstracts and reading the articles. Within the same database, further search was carried out using hypertension and lifestyle modification as the keywords. Out of the 24 articles found, 22 articles were excluded and only 2 were included. In total only 7 articles were used in this thesis from cinahl data base. The figure 1; searches done from cinahl full text, shows how the reliable materials were obtained.
Data search from Academic search elite (Ebsco host)

From academic search elite database, search was carried out resulting to 79 articles. Keywords used were lifestyle modification and hypertension. After filtering the articles through reading the titles and abstracts, only 3 article was found relevant. This is illustrated in the figure 2; searches done from academic search elite (Ebsco Host).

Figure 1 Searches done from Cinahl with Full text
Data search from Sage Journals

As the search proceeded, Sage journals were used using keywords lifestyle modification and hypertension prevention. The search resulted to 25 articles, which after going through the titles, 20 articles selected. Next the abstracts and articles were read and only 2 articles were found reliable for this thesis. Figure3: searches from sage journals demonstrate how the searches from sage publication were done.
Figure 3 Searches done from Sage journals


8 DATA ANALYSIS

Data analysis can be defined as the process where the content appropriate literature is critically reviewed in a more systematic manner with the aim of gathering the information from the different sources. Reviewers are urged to go through the reliable articles in order to have an overview of what they entail. (Cronin, Ryan, & Coughlan 2008.) Data indicates that after the searches and the article has been obtained, the reviewer needs to go through the material thoroughly in order to assess or appraise the literature. This appraisal will help the reviewer in determining whether the information found will be able to address the research question or not. (Aveyard 2010.)

Aveyard (2010) further indicates that after the literature has been read several times, the reviewer needs to put together the results obtained from different studies. By doing this, the reviewer will be able analyze different findings thus making comparisons of the results. The main object of data analysis is to come up with all-inclusive information from several studies in one article.

8.1 Content analysis

Elo & Kyngäs (2007) point out that content analysis is one of the many methods used in analyzing qualitative data. It entails description of a phenomenon in an organized manner. Both quantitative and qualitative data can be analyzed using this method. According to Lauri & Kyngäs (2005), inductive method of analysis can be employed if there is vast information regarding to the phenomenon being studied. This is where by the analysis approach moves from specific to general so that different aspects of the information are put together. He further suggested that inductive analysis is best when it comes to the analysis of the fragmented data, (Lauri & Kyngäs 2005.) Burns and Grove (2005) indicates that in deductive method of analysis, the data is analyzed in way that it moves from general point of view to a more specific.

In this thesis, the authors used deductive content analysis method. This method was chosen by the virtue that the information being analyzed existed before. The articles found reliable were 12 and the authors divided them equally such that
each author had 6 articles to analyze. The materials were thoroughly read in order to have clear understand. During this process, two main themes were identified. The authors therefore made subcategory, generic category and main category as illustrated in the table 3: a demonstration of how analysis was done in this thesis.

**Table 3 A demonstration of how analysis was done in this thesis**

<table>
<thead>
<tr>
<th>Subcategory</th>
<th>Generic category</th>
<th>Main Category</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alcohol consumption</td>
<td></td>
<td>prevention of hypertension</td>
</tr>
<tr>
<td>Smoking</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Physical inactivity</td>
<td>Predisposing factors</td>
<td></td>
</tr>
<tr>
<td>Unhealthy diet</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Factors supporting adherence</td>
<td></td>
<td>Adherence and Patient Empowerment</td>
</tr>
<tr>
<td>Factors hindering adherence</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Motivational interview</td>
<td></td>
<td></td>
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<tr>
<td>Patient nurse relation-ship</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Therapeutic skills in motivational interview</td>
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9 RESULTS

In order to answer the research questions, two themes were identified. The first one was predisposing factors to hypertension which include; alcohol consumption, smoking, physical inactivity and unhealthy diet. The second theme was treatment adherence which included; factors support adherence, factors hindering adherence, motivational interview, therapeutic skills in motivational interview and patient nurse relationship.

9.1 Alcohol consumption

Alcohol use was found to having direct relationship with the development of hypertension. The effects on the individuals blood pressure was dose dependent. Those who were heavy consumers exhibit greater variation in their blood pressure with the least consumers having milder effects (Brill J 2011.) Alcohol intake was associated with the increase in both systolic and diastolic blood pressure(Thomas &Atkins 2006).This was further reinforced by Stranges et al 2004 whom through cohort study found out that those who consume two or more drinks of alcohol a day were standing at high risk of developing hypertension. To reduce the overall cardiovascular risk, Miller (2003) suggested that there was need to restrict alcohol intake to 1 drink a day in women and 2 drinks a day in men.

9.2 Smoking

Evidence shows that smoking is one of the risk factors known to cause hypertension. Smoking has great effects to the heart and blood pressure. It causes damage to the lining of the artery walls, which causes narrowing to the arteries, hence rising blood pressure. Smoking also causes other risky disease such as heart disease, stroke and heart attack. Hypertensive patients who smoke are at higher risk of having heart attack, stroke and other cardiovascular diseases compared to non-smokers with hypertension. Smoking produces toxic chemicals which when absorbed into
the bloodstream can cause reduction of oxygen in blood and increases thickness hence increasing blood pressure. (ESH & ESC 2013.)

9.3 Physical inactivity

Physical inactivity is a modifiable risk factor for hypertension. It is important for people with hypertension to be fit in order to keep their blood pressure low (American Heart Association 2014). Physical exercises should be done regularly for prevention and treatment of hypertension. Activities such as aerobic dancing, biking, walking and sports are recommended for at least half an hour per day (ESH & ESC 2013.)

Overweight patients are at higher risk of developing hypertension, hence weight reduction is highly advised (Eskridge 2010). Low intensity workouts are a good start for losing weight and being fit. Hypertensive patients especially those who are overweight and obese are advised to exercise 5-7 days a week. Aerobic physical exercises have great impact on reducing systolic blood pressure and diastolic blood pressure by 6/4 mmHg points for hypertensive patients (ESH & ESC 2013.)

American Heart Association (2014) recommends consulting the health care professionals before engaging to any physical activity. Studies show that physical activities are safe for everyone if done the right way. It’s advisable to start with something that you enjoy such as swimming or bike riding for better motivation.

Not only does physical activities low blood pressure levels, it also assists in weight management and also boosts blood cholesterol and glucose levels. The first step before starting any exercise is to take a fitness test and visit a physician (ESH & ESC 2013.)

9.4 Unhealthy diet

Adaptation to a healthy diet is one way of minimizing the risk of developing high blood pressure. DASH diet helps patients with hypertension to manage their eating plan. Food recommended to patients with hypertension include vegetables, fruits, low-fat dairy products and soluble fiber. Although fruits are highly recommended,
they are at times high in carbohydrates which may cause weight gain, especially to overweight people (ESH & ESC 2013.)

Research show that excessive salt intake contributes to resistant hypertension. Recommended salt intake is 100 mmol per day (JNC 2004.) ESH & ESC (2013) recommends patients to avoid salt added to food and high salty food. American Heart Association states that too much salt adds excess fluid to the body that is dangerous to the heart.

Diet should be combined with other lifestyle changes for greater reduction of high blood pressure. Losing weight is necessary to the “overweight” and “obese” people. Best results are achieved by combination of proper diet and regular physical exercises. It is important to know that, balance between exercise and diet assists in maintaining a healthy body weight. It is also important to consult a nutritionist or a doctor for assistance before changing of diet (JNC 2004; ESH & ESC 2013.)

9.5 Role of health professionals in patient adherence to treatment regimen

Office of the National coordination for health information technology (ONC) 2014, reported that successful outcomes in treatment was still not fully achieved despite the fact that effective medical care existed. Viswanathan, Golin, Jones, Ashock & Blalock 2012 believed this discrepancy between the care given and the treatment outcome was due to adherence failure to the treatment recommendations. Wroth et al 2006 attributed over half of the treatment failure to lack of adherence. Sokol, McGuigan & Verprugge 2005 revealed that poor treatment adherence was the main cause of increased avoidable hospital admission, increased cost of medical cost and increased resistance to treatment regimen. To expound on this, the authors of this thesis came up with factors influencing treatment adherence. These factors were divided in to two groups i.e. factors supporting adherence to treatment and factors hindering treatment adherence.
9.5.1 Factors supporting adherence to treatment.

In this thesis, the following themes were identified to be promoting adherence; social support, financial stability, positive relationship with the care providers.

**Social support.** Studies indicated that families play a crucial role in treatment adherence. Families offer encouragement and motivation needed for behavior change. Likewise, peer groups proved to be one of the effective ways to offer support and sense of hope to the patients. (Starks, Simoni, Zhao, Huang, Fredrik, Pearson, Chen, Zhang 2008.) Family provides reinforcement to behavior change.

**Knowledge about treatment modalities.** Mccarley 2009 affirmed that adherence to treatment approaches by patient is more likely only if the patient understands the need for the behavior modification. As demonstrated by Bellington, Simpson, Unwin, Bray & Gilleys 2008, patients who are well informed about their treatment approach were able to make decisions and set informed goals with the hope of having the bright future. From the studies conducted by Tsay & Hung 2004, patients who were empowered exhibited considerable improvements in behavior change and self-care in general.

**Motivation.** WHO (2003) indicates that motivation plays an important role in treatment adherence. The values and beliefs held by the patients towards the treatment approach is directly proportional to the treatment adherence. Therefore, motivated patients are ready to follow the treatment guidelines.

**Positive relationship with care providers.** Gruege, Bergei, and Felkey (2005) showed that the quality of patient-care provider has grater effects on adherence. Patent care giver relationship which included encouragement, reinforcement and understanding exhibited high rates of adherence. Studies found out that nurses and other health professionals played an important role in empowering the clients with important information with regards to treatment adherence. Although it is the responsibility of the healthcare team to make recommendations on behavior change, studies showed that patients should take active role when it comes to lifestyle changes rather than being forced to adhere to changes formulated by others. (Tsay & Hung 2004.)
9.5.2 Factors hindering treatment adherence

Under factors hindering adherence, the following themes were identified; therapy associated factors, poor health status, poor social status, poor economic status, complexity in treatment regime, and lack of immediate results.

**Poor health status.** Evidence shoes that patients with other underlying chronic illness tend to have poor adherence. For example, patients with conditions that does not show signs and symptoms are less motivated to observe compliance recommendations (Krueger, Felkey, 2004.) Kruegler, Felkey, & Berger (2005) indicated that patients suffering from depression and other mental disorders were linked to poor treatment adherence.

**Poor social status.** The Agency for Health Research and Quality 2003(AHRQ) as cited in ONC 2014 indicated that low adherence was due to poor social status of the patient. Patients who came from unsupportive families were associated with poor compliance

**Complicated treatment regime.** Studies indicated that treatment approaches which interferes with the patient’s daily routine tend to have low adherence rates. Long treatment regime is also associated with adhere failure. (Tabor 2004.) Kruegler, Felkey, & Berger (2005) pointed out that treatment site effects can also have negative influences on adherence. Long treatment regime with lack of immediate effectiveness was linked with treatment default. America College of Preventive Medicine (ACPM) (2011) suggested the need for simplified treatment modalities which will suit the patient’s own daily activities. Suggestion was made that the caregivers should counsel and advice the patients on the importance of the behavior change.

**Low and unstable income.** As cited in ONC (2004), AHRQ (2003) pointed out that poor economic status was responsible for low adhere level. High cost of treatment and transport affects the adherence (Berger et al 2004).
9.5.3 Motivational interview

Studies have shown that motivational interviews facilitate engagement between the care provider and the patient, thereby fostering empowerment (McCarley 2009). Furthermore, studies on patients with chronic illnesses have shown positive results after motivational interviews. These include coping mechanisms, lifestyle modification, and psychological stability. (Knight, McGowan, Dickens, & Bundy 2006.) Sevick Trauth, Ling, Anderson, Piat, & Kilbourne (2007) demonstrated that through motivational interviews, patients had the opportunity to raise concerns about their planned management. For example, they had to argue out their reasons for supporting or going against the proposed behavior change. Observation was made by Levensky Forcehimes, O'Donohue & Beitz (2007) that it was the responsibility of the health professionals to offer guidance and to facilitate. Furthermore, studies on patients with chronic illnesses have shown positive results after motivational interviews. These include coping mechanisms, lifestyle modification, and psychological stability. (Knight et al. 2006.) Sevick et al. (2007) made an observation that through motivational interviews, patients were able to give their opinions with regards to proposed behavior change. He further explained that patients were able to give reasons as to why they supported or resisted the planned behavior change. With the help of health professionals, patients were to understand what conflicted with the set objectives and how the current lifestyle.

9.5.4 Therapeutic skills during motivational interview

McCarley (2009) indicated that nurses and other care givers who are responsible for carrying out patient interview and counselling should observe basic skills for it to be successful. These therapeutic skills are mainly: listening, avoid being right, using open ended questions, and lastly affirming.

Utilization of reflective listening. Studies show that the outcome was successful when the nurse listens then restates what the patient had said earlier. Moreover, this skill also enabled nurses to confirm that they got right what the patient had said at the same time facilitating patient’s acceptance to change. (Levenskey et al. 2007.)
**Avoiding being right.** Studies indicated that during the counselling or interviewing session, there was a feeling by the nurses that they knew everything with regard to the patient care. With this idea in mind they tend to force the patients to accept their recommendations. (Levensky et al 2007.) Schantell & Witten (2005) criticized this attitude and he suggested that instead, nurse should help in reinforcing the patients to realize the need to change.

**Use of open-ended questions.** McCarley (2009) revealed that motivational interview is a patient centered approach. Therefore, much time should be granted to the patient in order to express themselves. Suggestions were made to nurses to employ the use of open ended questions in order to elicit further discussions (Levenskey et al 2007).

**Affirmation and summarizing.** This is the final skill of the motivational interview. The nurses acknowledges the problems the patient had raised earlier in the interview by making the same statements. This will help in reinforcing and encouraging the patient to realize the need for change. By summarizing the whole conversation, the puts reinforcement on the patient’s willingness to modify his or her behavior. (McCarley 2009.)

### 9.6 Patient-Nurse Relationship

Nursing is one of the main pillars in patient care. To achieve the nursing goals, the nurse needs to establish the relationship with the patient. This relationship needs to be maintained through the caring period. (Warelow, Edward & Vinek 2008.)

The nurse patient relationship is important in a patient centered care whereby the patient assumes active role during the caring time (Doss, Depascal & Hadley 2011). To expound on this, Jonestone (2005) pointed out that for the successful partnership between a nurse and a patient, both should be on the same standard the Concept of trust is very important for a successful relationship. Gamez (2009) pointed out that the basic principle of nurse-patient relationship is based the fact that communi-
cation is corner stone for any relationship. Nevertheless, communication should entail empathy, patience and with the use of simple and understandable language to both the nurse and the patient. Johnsone (2005) indicated that any form of communication between the nurse and the patient should be guided by the set code of ethics. Gamez (2009) claimed that evidence has shown that the nature of nurse-patient relationship is based on the principle that the nurse helps the patient in restoring, promoting health, prevention of illness and foster patient independence.

Likewise, evidence showed that for the goals to be realized, the nurse should be competent in maintaining the relationship. The nurse should exhibit high standards when handling matters in relation to the patients’ health. This aspect will help in boosting confidence and trust. The main focus in this relationship is meeting the patient’s needs, empowering the patient to overcome its limitations and reinforcing the Patient’s potentials. (Gamez 2009.)
10 DISCUSSION AND CONCLUSION

From the finding of this thesis, hypertension is the main cause of cardiovascular diseases. According to this thesis, lifestyle modification is the main way of preventing hypertension. This can only be achieved through collaboration between the patient and the healthcare giver.

Lifestyle habits like physical inactivity, too much consumption of alcohol, smoking and poor eating habits are the main risk factors of hypertension. Pre-hypertensive patients are advised to modify these behavior habits in order to prevent the development of hypertension. Patients are advised to moderate alcohol consumption to 1 drink a day in women and 2 drinks a day in men. Physical activity is also beneficial in preventing hypertension. Diet high in salt level was also associated with the development of hypertension. Due to this, it is important to minimize the salt content in the food.

For lifestyle modification to be a success, a health relationship between a nurse and a patient is important. Nurses and other health care professionals need to develop a good rapport with the patients trust is the main aspect of nurse patient partnership. Nurse should see patients as the partners in the care delivery

Patient empowerment is very crucial in achieving the treatment goals. This can be realized through patient education. Patients are willing to change their un-health living habits but the lack information regarding the health lifestyle. For a successful patient education, the family members should be involved in education program. This will make it easy for the patient to implement the changes since the family members will be offering support and encouragement. care givers should not impose the changes to the patient but instead offer support and reinforcement to the patient.

Patients need to comply with the treatment plan in order to achieve the set goals for treatment. Despite improved medical care and intervention, treatment is not fully realized due to compliance failure Health care professionals play a very crucial role in ensuring that adherence is observed. It is the duty of the care giver to explain to the patient the importance of the treatment plan and to encourage them to adhere
to it. Caregivers have the responsibility of improving the adherence rate by making the service delivery environment conducive for the patients. Simplified treatment plan, and use of simple language are some of the ways of facilitating adherence.

Motivational interview is a key component in encouraging patients to change their un-health living habits. It gives patients opportunity to raise their concerns for or against the planned behavior change. Nurses and other caregivers should master therapeutic counselling skills in order to reinforce the required lifestyle habits. The attitude of knowing everything concerning the patient treatment is discouraged since this will make the patient feel inferior. Moreover, careful listening and repeating what the patient has said for confirmation helps in facilitating the change. Asking open ended questions is also important since it elicits further discussion between the caregivers and the patients. Restating and summarizing what the patient has said is also useful during interview since it reinforces the positive opinions held by the patient.

10.1 Conclusion

In conclusion, lifestyle modification is the main way of preventing hypertension. To attain this, cooperation between the health care providers and the patient is needed.

10.2 Ethical Issues

Ethical issues were observed in this thesis. Plagiarism was avoided by acknowledging of the authors at the end of every statement and also in the bibliography. The thesis was literature review therefore there was no need to seek permission from the ethics committee.

Reliability of this thesis was observed by using trusted data bases while searching for the information. Also, up-to-date data was used in the analysis process i.e. data from 2004 onwards unless the data which was cited in the up-to-date article. Data was also critically appraised to ensure that only the reliable data was included in the
final analysis. Two authors were responsible for a success of this thesis. Therefore the workload was shared equally amongst the two.
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