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**Supporting self-care in prevention of stroke through
patient education**

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Thesis Abstract

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Stroke is a medical emergency that on occurrence proceeds to mortality or physical disability. Self-care is a profound tool in prevention of stroke disease. Nurses are in an ideal position to play a vital role in ongoing patient education about risk factors, signs and symptoms, and hence assist in prevention of stroke disease among adult population.

The aim of this thesis was to enhance knowledge on the prevention of stroke disease through patient education. Systematic literature review was applied to conduct the study. The online databases that were systematically searched included Cinahl, Ebsco and Sage. A total 24 articles were pertinent to the thesis topic. Inductive content analysis was used to analyse the data gathered from these articles. In addition, inclusion and exclusion criteria were used to key out the information relevant in answering the research question in thesis.

The research questions of this thesis were: What information is relevant in prevention of stroke disease? What is the benefit of patient education?

The study resulted into a number of themes in relation to supporting self-care in prevention of stroke which includes; various aspects of prevention, patient education methods and risk factors of stroke disease. This thesis can empower nurses on how to appropriately educate the patients on prevention of stroke disease through enrichment of knowledge on risk factors and pathophysiology of the disease.

Keywords: Self-care, Support, Stroke, Health promotion, Prevention

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Abbreviations

ACEI	Angiotensin converting enzyme inhibitors
AF	Atrial Fibrillation
AHA	American Heart Association
ARB	Angiotensin II Receptor Blockers
CDC	Centre for Disease Control and Prevention
ICN	International council of nursing
JCAHO	The Joint Commission on Accreditation of health care organization
LDL	Low density Lipoprotein
NICE	Nursing Institute of Health and Care Excellence
NLNE	National league of nursing education
PA	Physical Activity
TIA	Transient Ischemic Attack
WHO	World Health Organization

1 Introduction

Stroke is a medical emergency that on occurrence proceeds to mortality or physical disability. Self-care is a profound tool in prevention of stroke disease. Nurses are in an ideal position to play a vital role in ongoing patient education about risk factors, signs and symptoms, and hence assist in prevention of stroke disease among adult population. (CDC 2014a.)

The occurrence of stroke is a life changing experience and a major cause of disability for any victim. As the population ages, the proximity of stroke occurrence also increases. In Finland, stroke is the fourth most common cause of death following Coronary artery disease, cancer and dementia. Globally it is marked as the second most common cause of death. (Current Care Guidelines 2011.)

More than 300 risk factors have been linked up with stroke disease. The main recognized risk factors correspond with three criteria; a high prevalence in numerous populations, a fundamental independent impact on the risk of stroke disease and their treatment and control bring about risk reduction. These include physical inactivity, obesity, abnormal blood lipids, high blood glucose levels, high blood pressure, unhealthy diets, tobacco use and alcohol use. (World Health Organization 2014.) These main risk factors are modifiable therefore, when controlled result in prevention of stroke disease.

Anyone can have stroke, therefore, it is essential to become familiar with risk factors of stroke disease. When persons have a deeper insight on the physiology and risk factors of stroke disease, they are able to understand how to prevent them. To effectively prevent stroke disease overall, it demands a coordinated patient-centered approach on the part of whole health care system. Nurses play a big role in prevention of disease and promotion of health. Therefore, patient education is an essential component of the nursing practice. (Bastable 2003.)

Patient education should be directed towards meeting the comprehensive needs of patients and their families. For nurses to meet their role as educator they must have a concrete foundation in the principles of teaching and learning. The patient education is advantageous not only to patient, but also to the nurses. The patient

benefits with the result of better health and an improved understanding of how they need to live to continue to have good health. In return, nurses will realize a greater job satisfaction from an improved therapeutic relationship with their patients. (Bastable 2003.)

2 Stroke disease

2.1 Definition and types of stroke

A stroke is caused by interruption of the blood supply to the brain because a blood vessel bursts or is blocked by a clot (WHO 2013). There are two major types of stroke: Hemorrhagic and ischemic strokes. Hemorrhagic stroke occurs when a blood vessels bursts, usually as a result of abnormalities in cerebral vessels. Ischemic stroke is responsible for 85 percent of all strokes. (Watkins & Leathley 2010.) Ischemic stroke occurs when an atherothrombotic plaque forms a clot that blocks the vessel or breaks off to block another vessel (Smith et al 2009). A transient ischemic (TIA) is a 'minor-stroke' and similar to ischemic stroke where symptoms normally surpass within 24 hours (Chapman & Bogle 2014).

Gillen (2011) says that stroke is a clinical syndrome characterized by sudden loss of function resulting from the disruption of the blood supply to a part of the brain. It is important to increase awareness about signs and symptoms of stroke. Risk factors of stroke such as age, gender, race, ethnicity and genetics cannot be modified but there are several other risk factors that can be reduced by healthy living or medical treatment that are termed as modifiable risk factors. These include: hypertension, coronary arterial disease, diabetes, hypercholesterolemia, smoking, physical inactivity, alcohol misuse and obesity. (Goldstein et al 2006.) Males of working age are twice more likely to get cerebral infarction than women of corresponding age. Furthermore, this gender- related difference only offs at age of 65 years. (Nyrkkö 1999.)

The occurrence of stroke is a life changing experience for any victim. Not only does it affect the individual, but also the entire family by inflicting anxiety and emotional pain. It is often that a stroke patient will face instant change in physical, mental and social capabilities, depending on the site of incidence in the brain and severity of tissue damage. (Current care guidelines 2011.)

In Finland, there are over 10,000 patients with some form of cerebrovascular diseases every year, a third of these patients are of working age. This poses a

great burden on the health care system and overall economic growth and work labor force of the country. Over 5000 persons die from cerebrovascular diseases in Finland per year, making it the third most common cause of death in the country. The stroke survivors, of who are roughly 5000, are left with symptoms that disable daily activities and hence working ability. (Nyrkkö 1999.)

One of the complications of stroke is a cognitive deficit. This may result into general impairment of intellectual capacity, memory disorders and post-stroke dementia. Secondly, stroke may result into neuropsychological deficits – aphasia, apraxia, visuospatial deficits and neglect syndrome. Aphasia is a linguistic deficit caused by brain damage and it affects not only the production and understanding of language but also reading, writing and counting. Apraxia is a deficit of voluntary motoric action. This may be unilateral or bilateral and affect upper and/or lower limbs, face or area around the mouth. Stroke patient may experience visuospatial disorders such as difficulties finding places, recognizing time from a clock, estimating distances and localizing details, as well as difficulties constructing or drawing pictures. (Nyrkkö 1999.)

Neglect syndrome is defined as difficulty to react or orient to new significant stimuli on the opposite side of the brain lesion. Symptoms include patient may run into objects on the side contralateral to the lesion, neglect this side of the body in washing and dressing and eat only from one side of the plate. (Nyrkkö 1999.)

Stroke affects the quality of life of sufferer and relatives and hence may result into depression. In depth, finances of family may change, family roles may be altered and the patient and spouse sexual activity may be hindered. (Nyrkkö 1999.)

2.2 Symptoms of stroke disease

According to American Heart Association (AHA 2004), the most common symptoms of strokes are sudden numbness or weakness in the face, arm or leg, especially on one side of the body; sudden confusion or difficulty speaking or understanding speech; difficulty seeing in one or both eyes; sudden difficulty in walking, dizziness or loss of balance or coordination; or sudden and severe

headache with no known cause and fainting or loss of consciousness. These symptoms develop suddenly and are normally focal impacting only a part of brain function. According to National Institute for Health and Care Excellence (NICE) headache is not a typical feature of ischemic stroke but it may indicate a hemorrhagic stroke (NICE 2009).

2.3 Emergency treatments

Stroke guidelines stress the necessity of rapid diagnosis and admission to a specialist stroke unit. Stroke is now regarded as a time critical medical emergency. Thrombolysis must be administered within three hours of the onset of stroke. (NICE 2008.) Ensuring a good supply of oxygen to the damaged brain is vital and high flow oxygen is associated with improvement in clinical deficits (Singhal et al 2005).

3 Patient Education

3.1 What is patient education?

Patient education is a process of assisting people to learn health related behaviors (knowledge, skills, attitudes and values) so that they can incorporate those behaviors into everyday life (Bastable 2003). Patient education has numerous benefits; increased patient functionality, improved life quality and reduction of incidence of disease and hence hospital admission. Therefore it is important for the nurse to know the most effective methods of education for patients and their families as well as special considerations to take into account. There are three vital aspects to patient education – disease prevention, disease specific education, and self- management. (Ho & Yan 2010.) According to the Centers for disease control and prevention (CDC), patient education should be centered on individual health literacy. Health literacy is defined as “the capacity to obtain, process, and understand basic health information and services to make appropriate health decisions. (CDC 2011.)

3.2 Historical foundation for the teaching role of nurses

Patient education has been profoundly established in the history and development of nursing. The founder of modern nursing, Florence Nightingale, not only established first school of nursing but dedicated an ample portion of her career to educating those included in the delivery of health care. (Bastable 2003.) By the early 1900s, public health nurses distinctly understood the significance of education in the prevention of the disease and in maintenance of health. (Chachkes & Christ 1996.)

National league of nursing education (NLNE) has identified course content dealing with teaching skills, developmental and education, psychology and principles of the education process of teaching and learning have areas in the curriculum common to all nursing schools (Redman 2003). Furthermore, International council of nursing (ICN) approved education for health as an essential requirement for

nursing care delivery. The Joint Commission on Accreditation of health care organization (JCAHO) has increased its expectations to include interdisciplinary team approach in the provision of patient education. This requirement means that the providers must consider the literacy level, educational background, language skill and culture of every client during the education process. (Davidhizar & Brownson 1999.)

3.3 Definition of education process

The education process is a systematic, sequential and planned course of action consisting of two major interdependent operations, teaching and learning. The steps of education process run parallel to nursing process. In depth, both processes consist of assessment, planning, implementation and evaluation. Education in broad aspect includes acts of teaching and instructions. Teaching is a deliberate intervention that involves planning and implementation of instructional activities and experiences to meet intended learner's outcomes according to teaching plan. Instruction, is one aspect of teaching that involves, communicating of information about a specify skill in the cognitive, psychomotor, or affective domain. (Bastable 2003.)

Learning is defined as a changing behavior (knowledge, skills and attitudes) that can occur at any time or in any place as a result of exposure to environmental stimuli. The success of the nurse educator is measured by how much the patient has learnt, rather than the quantity of content impacted. (Bastable 2003.)

ASSURE model (Rega 1993) is a generally accepted standard to assist nurses to organize and carry out the education process. The acronym stands for; Analyze learners, State objectives, Select instructional methods and tools, Use teaching material, Require learner performance and Evaluate the teaching and learning process.

3.4 Patient education methods

There are various education techniques a nurse can use to deliver information to the patient. A nurse should adapt various teaching styles for instance the use of videos, computers and simulation education – this increases knowledge retention and lowers the incidence of uncertainty about instructions and information given to patients when using purely verbal education. Secondly, it is important for a nurse to select the main points to be discussed and practice repetition. This is a vital tool in both outpatient and inpatient settings – for example in acute hospitalization, education can be initiated at admission and continued throughout the duration of hospital stay until discharge. Furthermore, a nurse should take into account individual preferences about learning methods and capability to take in knowledge – for stroke survivors with communication adversities, aphasia friendly materials can be used. Pamphlets and brochures, reinforcing risk reduction and early intervention for stroke and cardio vascular disease can be made available for those people. (Cameron 2013.)

Verbal teaching should only be used along with another teaching method. For patients to efficiently recall verbal information, audiotapes of patient consultation can be utilized. An effective patient education teaching strategy is provision of written material. Appropriate use of visual aids for instance pictures and illustrations heighten printed materials particularly for those with low literacy skills. It is of great importance for nurses to deliver patient specific information-information specific to the patient's actual clinical situation. (Friedman et al 2009.)

3.5 Roles of nurses as educators

Educating patients, their families, nursing staffs in work settings or nursing students has been a professional responsibility of a registered nurse over the years. The nurse as an educator supports patients to be independent in controlling their health and assist fellow colleagues and future nurses to convey best nursing practices to those whom they care for. However, it is important to note that many nurses are not formally prepared to successfully and securely take on this role. For nurses to be competent and confident in assuming their role as educators, they should have substantial understanding of teaching and learning. Giving information should not be limited only to ill clients but also to those who are well in order to maintain optimum quality health and prevent disease. Hence, the teaching role of a nurse has evolved from what was earlier a disease-oriented approach to a more prevention-oriented approach. The roles of nurse are to promote learning, and provide a conducive environment to learning. (Wagner & Ash 1998.) The nurse should be aware of the fact that teaching and learning are participatory process. Evidence indicates that effective education and learner participation go hand in hand; hence, it is important to actively involve the learners. Nurses being the largest group of health care professionals are in forefront position to deliver a holistic care and impart education to attain and maintain healthy lifestyles. (Bastable 2003.)

3.6 Content of patient education on stroke disease

Education on the risks of stroke and developing patient centered goals should be included in disease prevention information. In the case of secondary prevention – stroke survivors, disease-specific education includes pathophysiology of the disease and a detailed treatment plan process. Problem-solving, decision making, resource utilization and creation of an action plan should be included in self-management education. (Maasland et al 2011.)

3.7 Family education on stroke disease

Family involvement in patient education is important hence the nurse should be trained on how to implement family education. Family members should be given information on the pathophysiology of the disease, disease prevention, diagnosis, treatment, rehabilitation and self-management. In addition, families with a stroke survivor should be educated on self-care for family and patient, as well as, coping mechanisms. Emphasis should be on follow up treatment, social and emotional support groups, and attainable resources for instance transportation or rehabilitative tools. (Visser- Meily et al 2006.)

3.8 Barriers to education and obstacles to learning

Barriers to education are those factors impeding the nurse's ability to deliver the education services, whereas, obstacles to learning are those factors that dissemble the ability of a learner to attend to and process information. Nurses pointed out shortage of time as the greatest barrier to carry out their educator role effectively. Short duration of hospital stay, early discharge of patient from inpatient setting and the movement toward community based setting often bring about nurse and patient having minimal contact with each other in health care setting. A vast number of practicing nurses lacked teaching skills therefore were inadequate to assume the role as an educator. Personal attributes of nurses also play a vital role in the success of teacher learning interaction. In different health care settings, where nurses are expected to educate their client, lack of privacy and space – treatment plans, regular interferences and noise among others disrupt concentration and effective interaction. Some nurses and physicians contemplate on whether patient education is effective. They argue that some patient prevent teaching as they display lack of interest in changing behaviors or demonstrate an unwillingness to learn. Not all health care professional are onboard to carry out health teaching following a specific standard. This results in an inadequate coordination of healthcare team. Insufficient documentation of patient teaching activities hinders communication among health care staffs concerning what has been taught. (Bastable 2003.)

The main obstacles interfering with a learner's or patient's ability to gain information include; stress of acute or chronic illness, anxiety, sensory deficits and literacy level interrupt the process of learning. Individual characteristics of the learner affect the degree to which behavioral changes are attained. The goals and objectives that are set to reach the expected behavioral outcomes may overwhelm the learner and deter them from learning. Lack of family support and continuous positive reinforcement from some nurses impede the potential for learning. Psychological obstacles for instance denial of learning needs hinder the learning process. (Bastable 2003.)

4 The goal and purpose of the thesis

The goal of the thesis is to find evidence based information regarding modifiable and non-modifiable risk factors of stroke disease and life style changes that can support self-care among the adult population aged 20-65 years. The purpose of this thesis is to enhance knowledge about prevention of stroke disease through description of life style modifications. As a result, nurses will have support in order to spread ethos of supported self-care through patient education.

Research questions of thesis are:

What information is relevant in prevention of stroke disease?

What are the benefits of patient education in stroke disease?

5 Methodology

Qualitative research is concerned with exploring meaning and phenomena in the natural setting. The data will be used to generate understanding and insight of the situation being researched. The qualitative research is descriptive and interpretative. There is no use of statistics. In contrast to qualitative research, quantitative research uses experimental methods and statistics. Hence, quantitative research is not applicable to this thesis process.

5.1 Data collection method of the thesis

Literature review is the method for data collection of this thesis. Literature review is a comprehensive study and interpretation of literature that relates to a particular topic. It seeks answer to the research question by searching and analyzing relevant literature using a systematic approach. Literature review is a vital tool as it provides a synthesis of research and information on a particular topic. It is an essential tool that identifies a specific review questions, identifies all relevant studies, appraises their quality and summarizes their results using a scientific methodology. It includes a comprehensive search strategies and synthesis of research evidence that is completely based on evidence based process. (Aveyard 2010.)

5.2 Literature review process

Literature review is a qualitative research method that is used to answer well-focused questions about clinical practice. Literature review is conducted in a manner that seeks to identify, select, evaluate and synthesize the evidences which are relevant to the research question. (Saltikov 2012.) This can also be defined as concise summaries of the best available evidence that address sharply defined clinical questions (Craig & Smyth 2007). Literature review contains a comprehensive search strategy, which can be used to access evidence based knowledge in the research process (Cronin, Frances & Coughlan 2008). The

purpose of a literature review is to provide a list of all published studies relating to a specific subject area. The literature review provides a complete scenario on the information of the particular context ensuring the review is comprehensive. (Aveyard 2010.) Literature review is used as a research method in this thesis because it is already predefined as part of the bachelor thesis process. Secondly, a systematic literature review directs the planning and execution of the study. Thirdly, it is an assistive tool in producing relevant and evidence based information from publications using inclusion and exclusion criteria. A series of steps are undertaken in the planning, conduction and reporting of the research. (Cronin et al 2008.)

5.2.1 Selecting a review topic

The first and foremost step towards initiating a literature review is selection of research question. The number of research questions may vary according to the research. (Aveyard 2010.) According to Priest et al (2006), the research questions should be feasible, of interest to the researcher, original, pertinent and ethically sound. The research questions should also be answerable and realistic within the available time frame. The research questions should be answerable using the literature in the research method. (Aveyard 2010.) In this thesis writing process, the authors complied with the steps of a systematic literature review. On formulation of the research topic, the authors of this thesis identified two research questions that were closely related to the topic.

5.3 Data collecting process of the thesis

Using Cinahl database, various searches were done as explained in figure 1. Searches with the truncated keywords Stroke, prevent and patient education, altogether 23 results were found from this database. With further filtration, 16 articles were excluded and 7 articles were included. From the same data base, a search was made using keywords stroke and self- management. 18 articles were excluded out of 22 and 4 articles were included. As the search preceded forward,

hypertension, prevention and stroke were used as keywords, producing 1538 results out of which only 3 articles were relevant to thesis topic. When the keywords cerebrovascular, hyperglycemia and prevention were applied, 1 article came out and this was included. Together 15 articles were selected from Cinahl and used in the thesis.

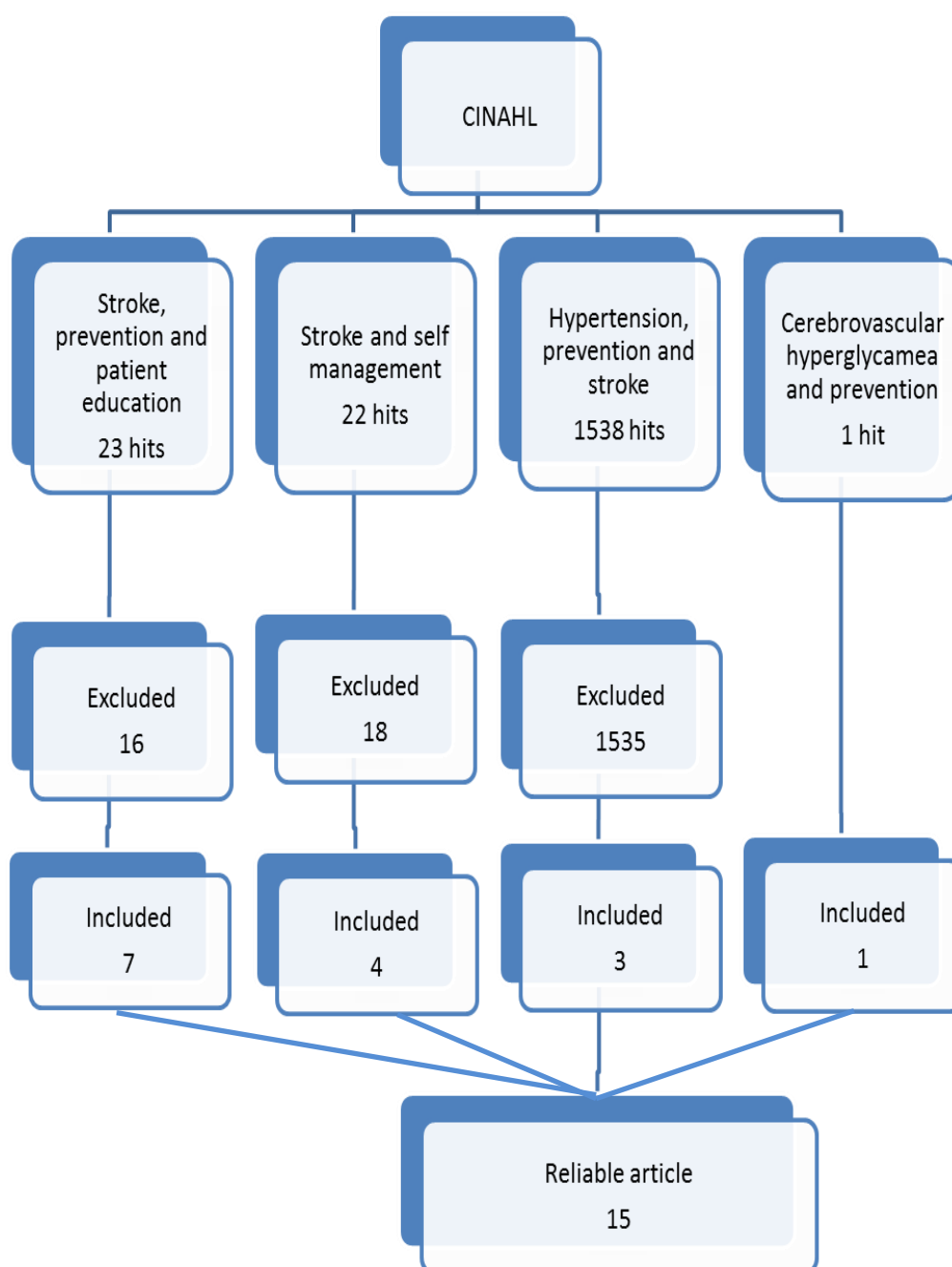


Figure1. Searches done from the Cinahl

Academic database Ebsco was also used as the research process advanced. With keywords Stroke and prevention, 1159 were excluded out of total 1160 results and 1 article was included. Furthermore, 9 articles resulted from the search using the keywords stroke; self -care and importance 2 articles were included, excluding 7 articles. Hence, 3 articles were included from Ebsco.

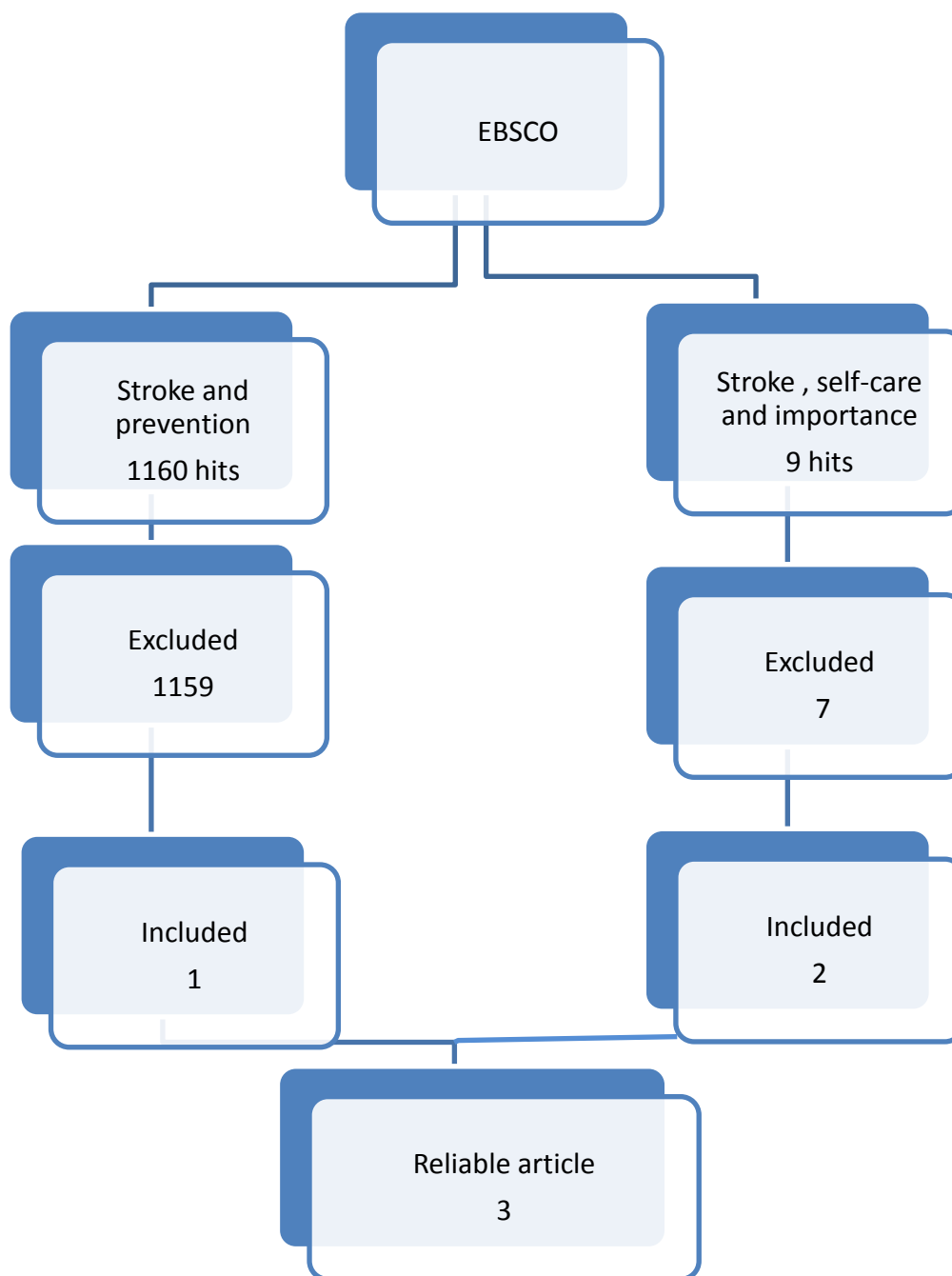


Figure 2. Searches done from Ebsco

Searches using SAGE, keywords hyperglycemia and stroke prevention produced 32 results, 27 articles were excluded using 5 articles. While using nutrition and stroke prevention as other keywords, 48 results appeared, out of which, 1 article was used excluding 47 articles. Together 6 articles were used as reliable article for the thesis from SAGE.

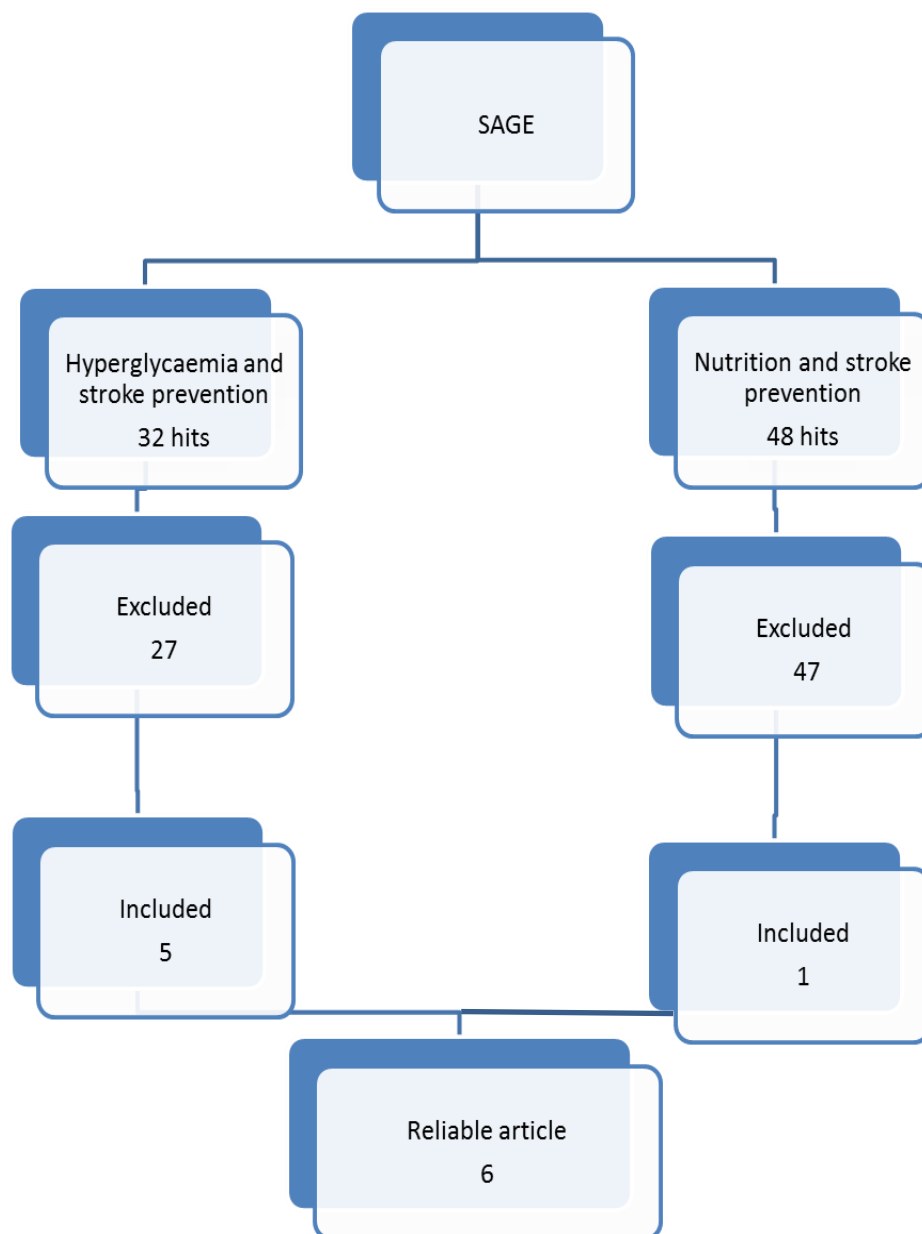


Figure 3 Searches done from SAGE.

From the academic databases Cinahl, Ebsco and Sage, a total of 24 articles were included in this literature review process.

The search done from the three database Cinahl, Ebsco and Sage, different combinations of the keyword were used to form search words. Limitations were used to narrow down information search. The search was limited from the year 2004 onwards, articles published in English language only, peer reviewed literature, published literature only and full text articles with abstract. The research articles that met the inclusion criteria, were clearly examined by reading through their titles and abstracts. By doing so, a definite understanding of the content of the articles was realized.

Furthermore, the data collected from these articles was analyzed with an inductive approach. The objective of this content analysis used in the research, was to classify the data into a number of sub categories, generic categories and eventually main category. The themes that emerged in the analysis gave meaning and relation to the research questions in this thesis.

5.3.1 Database used in the data collecting process

Reliable online resources (journals, articles, e- books) from databases Cinahl, Ebsco and Sage were used. An exclusion and inclusion criteria was used to gather information that is substantial to this thesis.

It should be emphasized that the type of literature required to address the research is totally dependent on the research question. It's important to know if the research topic has been carried out before in order to determine the necessity of undertaking the research. (Priest et al 2006.) The number of selected keywords is used to identify the relevant studies. A wide range of information that is relevant to the research will be identified to address the literature review question. (Aveyard 2010.)

Literature searches are pioneered by using computer database which offers an easy and quick access to immense quantities of information (Cronin et al 2008). The most common method of recognizing literature is key word searches (Ely & Scott 2007). Keyword search should be considered carefully in order to select terms that will generate the data being sought. Keywords used to find terms in

American databases for instance CINAHL may differ from the British in spelling and meaning. (Cronin et al 2008.) To facilitate the search through various electronic databases, commands called Boolean Operators can be used. “AND”, “OR” and “NOT” are the most commonly used Boolean operators. “AND” look for article that includes all the identified keywords. “OR” looks for articles that include any of the identified keywords and NOT exclude articles that contain this specific keyword. Existing literature and systematic review offer a good overview of the research as an important source of data that could help to determine the relevance to the present thesis writing. Available literature reviews also provide bibliographic references. (Ely & Scott 2007.)

Journals are considered as more conversant than books as primary sources of information. It is significant to keep a record of the keywords and methods that are used in searching the literature for the future references. (Timmins & McCabe 2005.)

5.4 Central concepts used in the search process

Key words, which were used in the thesis search process, were self-care, support, stroke, health promotion, patient education, and prevention.

5.4.1 Self-care

Self-care is defined as a universal requirement for sustaining and enhancing life and health, an ongoing process activity for individuals and groups and an area of competence to be developed. Self-care directed towards health protection and health promotion can be defined as activities initiated or performed by an individual, family or community to achieve, maintain or promote maximum health. (Pender 1996.) According to Department of Health, self-care support is classified into five fundamental concepts: Information, skills and knowledge training, tools and self-monitoring devices, healthy life style choices and support networks (DH 2009.) Self-care has numerous health benefits. First of all, self-care enables individual to be accountable for their own health and wellbeing, with support from

the caregivers, either nurse, doctor or related health professionals. Secondly, individuals with chronic illnesses can live longer, have a better quality of life and be more active and self-reliant. Finally, individuals will gain increase mobility, reduced disability and reduced need for hospital admissions. (DH 2009.)

5.4.2 Support

According to Merriam Webster dictionary [Ref. 16 April 2014], support is defined as providing help or assistance to someone or something. The concept of nursing support involves patient assessment, empowerment, family education and a therapeutic interaction. These elements provide a good base to health care professionals in the provision of family centered care. (Pender et al 2002.)

5.4.3 Stroke

According to WHO definition of stroke is “ rapidly developing clinical signs of focal (or global) disturbance of cerebral function, with symptoms lasting for 24hours or longer or leading to death with no apparent cause other than of vascular origin” (WHO 2000). Stroke is a disease that affects the arteries leading to and within the brain. A stroke occurs when a blood vessel that carries oxygen and nutrients to the brain is either blocked by a clot or ruptures. When that happens, part of the brain cannot get the blood and oxygen it needs leading to the death of brain cells. (AHA 2004.)

5.4.4 Health promotion

According to (WHO 1998) Health promotion includes encouraging healthy life styles, creating supportive environments for health, strengthening community action, orientating health services to place primary focus on promoting health and preventing disease, and building healthy public policy. Health promotion includes 5 different aspects: Individual wellness, family wellness, community wellness, environmental wellness and societal wellness (Pender et al 2002).

5.4.5 Prevention

Disease prevention covers measures not only to prevent the occurrence of the disease, such as risk factor reduction, but also to arrest its progress and to reduce its consequences once it's established. Disease prevention is sometimes used as complementary term alongside health promotion. Disease prevention in this context deals with individuals and population identified as exhibiting identifiable risk factors, often associated with different risk behaviors. (WHO 1998.)

Disease prevention is an extensive approach which includes primary, secondary and tertiary levels of prevention. Primary prevention is concerned with actions that prevent disease from occurring and reduce its incidence. These measures come before the onset of disease and consists health promotion and protection. These include smoking cessation, regular physical activity, good nutrition and a wide range of government regulations. (Mirolla 2004.)

Secondary prevention refers to early detection of disease that can minimize the progression and thereby irreversible damage. It includes blood pressure checkups, and other forms of screening. Primary and secondary prevention can be closely associated with each other. For instance, secondary prevention of hypertension can be the primary prevention of stroke. The control of a disease that has already developed, slowing its progress and reducing the resultants disability is defined as tertiary prevention. It may include both pharmacological intervention and actions such as: physical activity and good nutrition that can control cardiovascular disease and hypertension. (Community Health Nurses of Canada 2012.)

5.5 Inclusion and exclusion criteria of the material

Inclusion and exclusion criteria are a tool used by literature reviewers to identify literature that addresses the research questions and that which does not. It is a realistic approach in the thesis due to the fact that, the scope and detail of a review can be demonstrated. Clear boundaries are set and hence authors could focus on literature searching. Table 1 explains the exclusion and inclusion criteria of this literature review.

Table 1. The inclusion and exclusion criteria of the literature review are presented.

Inclusion Criteria	Exclusion Criteria
1. Research related to stroke, supporting self-care, patient counselling	1. Research not related to stroke, patient counselling
2. Articles published in English language only	2. Other articles except English
3. Research published 2004 onwards.	3. Research published before 2004.
4. Published literatures only	4. Unpublished literature
5. Full text articles with abstract	5. Articles which are not full text and without abstract.
6. Peer reviewed	6. Not peer reviewed

6 Data analysis method of the thesis

The data analysis process applies content analysis in which the evidence is combined together to address the research questions. The aim is to interpret and then summarizes the findings from different studies or other pieces of information into manageable amounts. By doing so, new meaning from the sum of these papers can be obtained which is more fruitful than reading each one individually. The common approach of bringing all information together can be termed as meta-synthesis. (Aveyard 2010.)

It is important to assess the quality of the literature in order to determine how much weight it should have in addressing the research question. In order to make these assessments the information gathered will be read and reread to become familiar with, to determine the strength, limitation and relevance of the source. This process is called critical appraisal. There are various assessment tools for critical appraisal easily accessible online. (Aveyard 2010.) Systematic review adopts strict criteria to appraise the perspective on topic relevance (Parahoo 2006). Hek and Langton (2000) focused on the criteria of quality, credibility and accuracy while appraising the literature.

The identification of the common themes that arise from the literature review is shown in process of synthesizing the literature. The theme will be written under a series of main heading within which the discussion of the main results are extracted from the themes. The themes will be presented in a way that addresses the research question after organizing them in a logical order. (Aveyard 2010.)

6.1 Inductive content analysis

Content analysis is a systematic and objective means of describing and quantifying phenomena. (Elo & Kyngas 2007.) Cavanagh (1997) describes content analysis as a method of analyzing documents that allows the researcher to test theoretical issues to deepen understanding of the data. Content analysis is used for making replicable and valid inferences from the data with the purpose of

providing knowledge, new insights, a representation of the facts and a practical guide to action. (Elo & Kyngas 2007.)

Preparation, organizing and reporting are the three main phases of content analysis where the main feature is that the many words of the text are categorized into much smaller content. The preparation phase begins with selecting the unit of analysis. Polit & Beck (2004) says this can be a word or a theme. Deciding on what to analyze in what details and sampling considerations are other important factors before choosing the unit of analysis. When using inductive content analysis, next step is to organize the qualitative data which includes open coding, creating categories and abstraction. (Elo & Kyngas 2007).

Open coding means heading and notes are written in the text while reading it. The written material is read through again and as many headings as necessary are written down in the margin to describe all the aspects of the contents (Hsieh & Shannon 2005.) The headings are collected from the margin on to coding sheets and categories are freely generated in this stage. The lists of categories are grouped under higher order of heading with an aim of reducing the number of categories by collapsing the similar or dissimilar into the broad higher order categories. (Elo & Kyngas 2007).

The purpose of creating categories is to provide means of describing the phenomenon, to increase understanding and to generate knowledge (Elo & Kyngas 2007). In the thesis a main category, three generic category and 13 sub categories were formulated using inductive content analysis. In this section of thesis process, the authors sought to answer the questions based on compiled data from the literatures. The figure 4 demonstrates how the authors were able to develop themes and provide answers to the research questions.

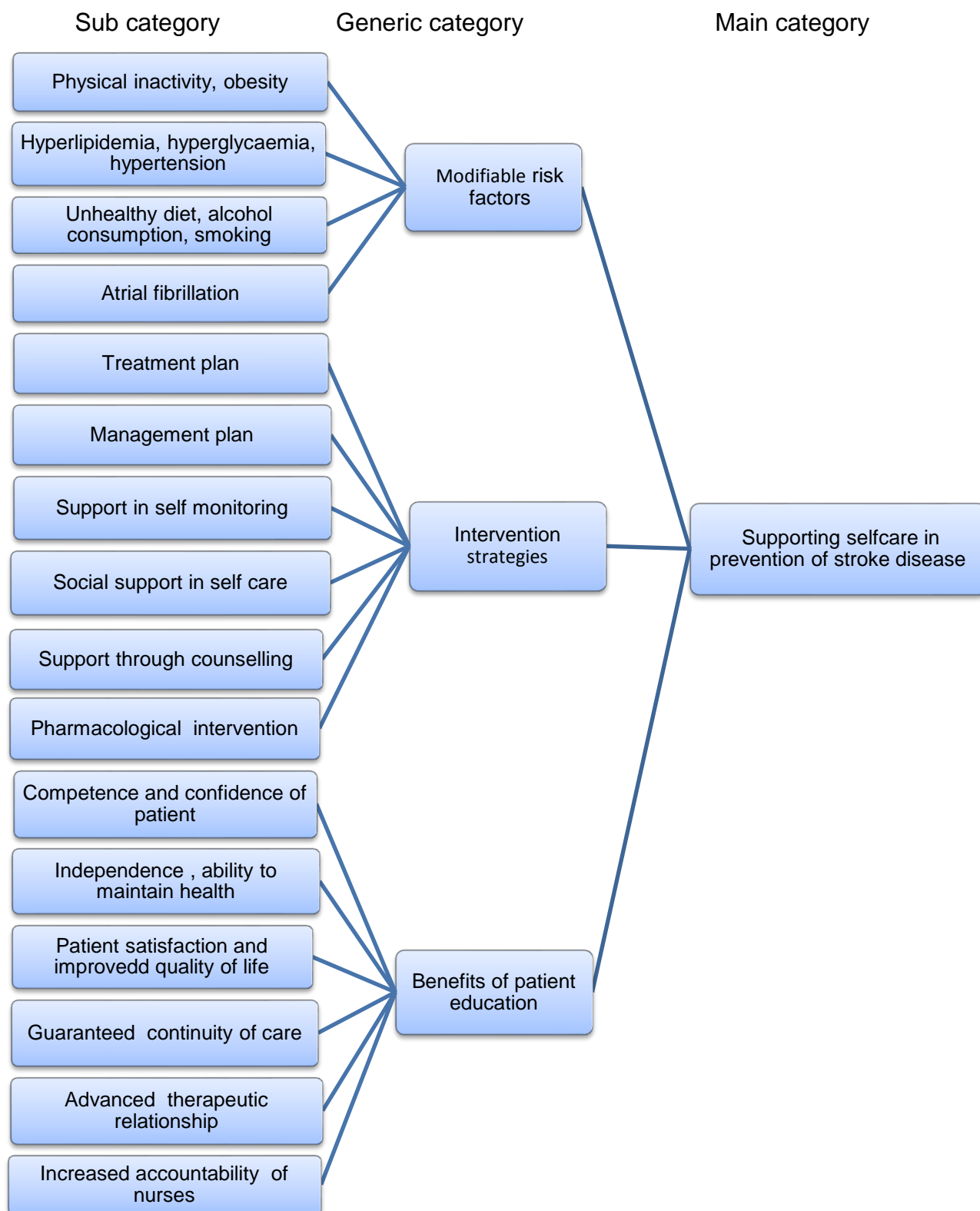


Figure 4. An example of the abstraction process.

7 Results

Upon completion of the data analysis process, information from the articles were checked to make sure it answers the research questions of the thesis. Three generic categories were emerged during the analysis; they included modifiable risk factors, intervention strategies and benefits of patient education.

Supporting self-care in prevention of stroke disease can be realized through effective treatment and control of the modifiable risk factors. The information below states the main controllable risk factors of stroke and provides information on how they can be managed. Furthermore, the benefits of health education on stroke disease are also mentioned. Primordial prevention of stroke disease can be achieved through behavioral changes, medical therapy for instance physical activity, healthy diet, salt reduction, reduced alcohol consumption, smoking cessation, management of hypertension, and use of statin and anticoagulant therapy.

7.1 Most common modifiable risk factors of stroke disease.

7.1.1 Physical inactivity

Physical inactivity such as sitting while driving a car or watching television, working in a sitting position increases the risk of cardiovascular disease and stroke. Uninterrupted sitting over a long period of time poses as risk factor of overweight and obesity. (Vuori 2010.)

7.1.2 Obesity

Research has shown that as individuals become "overweight" and "obese", they are at increased risk of developing stroke disease. When BMI falls outside the "normal" range or healthy weight range it is advisable to seek medical attention. (CDC 2014a.)

7.1.3 Hyperlipidemia

Hyperlipidemia is defined as total cholesterol > 5 mmol/L (Mitchell et al 2012). Hyperlipidemia is addressed with a purpose of reducing low density lipoprotein (LDL) cholesterol (Amarenco et al 2006).

7.1.4 Hyperglycemia

Hyperglycemia is defined as elevation of blood glucose level > 6.0mmol/L (108 mg/dL). In the primary phase of stroke, blood glucose level is usually raised. (Lindsberg & Roine 2004.) Diabetes mellitus is a group of metabolic diseases marked by increased levels of glucose arising from defects in insulin production, insulin effect, or both. The main two types of diabetes are Type 1 and Type 2. In Type 1 diabetes there is complete insulin deficiency resulting from specific destruction of insulin producing pancreatic (β -cells). A combination of tissue insulin resistance and relative insulin deficiency causes Type 2 diabetes. The risk of stroke in Type 1 diabetic individuals is increased relative to their age-matched, non-diabetes, and compared to individuals with Type 2 diabetes. The risk of death after ischemic stroke in Type 1 diabetic persons is largely increased. (Loganathan et al 2006.)

7.1.5 Hypertension

Hypertension is a recurrent medical status in which the arterial blood pressure is raised (systolic > 140mm hg, diastolic < 90mm hg) (Machha & Schechter 2011). The relationship between blood pressure and cardiovascular disease such as stroke is persisting, coherent and independent of other risk factors; therefore control of high blood pressure is vital (CDC 2014b).

7.1.6 Alcohol consumption

Continued excess consumption of alcohol is linked to hypertension and cardiac effects such as atrial fibrillation. Binge drinking is related to an increased risk of stroke (Beevers & Lip 2007; Lim 2007).

Binge drinking is up to 5 or more drinks on an occasion for men or 4 or more drinks on an occasion for women. Excessive use of alcohol can lead to development of chronic conditions and diseases for instance high blood pressure and stroke disease. Alcohol reduces adherences to medications such as statins and anti-hypertensive drugs. (CDC 2014.)

7.1.7 Cigarette smoking

Smoking is a well-known risk factor for primary stroke and ischemic heart disease. Continual smoking after stroke is linked to increase post –stroke mortality rate (Kammersgaard & Olsen 2006). Arterial stiffness is stimulated by persistent cigarette smoking therefore, blood pressure which may prevail for a decade after smoking cessation. The occurrence of high blood pressure is raised among those who smoke 15 cigarettes per day. (Luckson 2010.)

7.1.8 Atrial fibrillation

Atrial fibrillation (AF) is a usual cardiac arrhythmia that remarkably increases the risk of ischemic (embolic) stroke. The human heart usually has a regular rhythm at a rate of approximately 60-70 beats per minute at rest, which is termed as sinus rhythm. In contrast, electrical impulses are irregular in AF and the heart beats irregularly and, commonly, faster than normal. AF is a major cause of stroke and other morbidities: 15% of strokes are preferable to AF. (CDC 2014.) Therefore, early detection of AF is essential for prevention of stroke. Dizziness, palpitation, shortness of breath is symptoms linked to AF. Nevertheless, it is crucial for nurses to be aware of the fact that many individuals are asymptomatic and unconscious of their abnormal heart rhythm. (Bloe 2011.)

7.2 Intervention strategies to support self-care

7.2.1 Nursing support through treatment plan

The nurse should focus on patient and family education, facilitation of patient participation in care, and promotion of wellness and optimal health. This can be achieved through a process of care plan that includes assessment, diagnosis, and development of a treatment plan for patients needing primary and/ or secondary prevention. Goal attainment involves the patient ability to make life style changes and to adhere to a medication regimen. (Kerr 2012.)

7.2.2 Support through lipid management program.

The nurse can run a lipid management program for patients with hyperlipidemia where lipid lowering therapy is used and low density lipoprotein levels are monitored. The responsibility of the nurse include contacting patients to discuss recent laboratory results, communicating the importance of participating in lipid lowering programs, discussing lipid goals and dietary modifications. In addition, the nurse should provide patient instruction on the lipid lowering medications prescribed such as statins and follow up treatment. The nurse should understand that hyperlipidemia is a chronic condition and as such, requires a program of long term disease management similar to that for other chronic conditions such as hypertension and diabetes. (Mason 2005.) Statins are the standard treatment for high LDL cholesterol (Amarengo et al 2006). Statin decreases the liver's production of LDL that leads to evolvment of atherosclerosis. (NHS Choice 2013.) According to NICE, for every mmol/L decrease in LDL cholesterol, a 20 per cent stroke risk is attained (NICE 2008).

7.2.3 Support in self-monitoring and assessment

A comprehensive physical examination is necessary to ascertain the degree of obesity in patients and to determine the associated disease risk. Measuring Body

Mass Index should be given special attention and observing the distribution of body fat – particularly central accumulation of visceral fat. Body Mass Index (BMI) is a screening tool used to identify potential weight problems in adults. One of the best methods for assessment of overweight and obesity is calculating BMI. BMI is a numerical value calculated from a person's weight and height. Appendix 4 depicts the standard weight status categories associated with BMI ranges for adults. The BMI is simple and not expensive to use for health professionals and general publics. (CDC 2014a).

For patients who are already obese, early intervention can prevent further complications such as occurrence of stroke disease. The nurses' goal is to establish a long term weight control through changes in diet and physical activity. To effectively manage weight, the nurse should conduct a detailed diet and physical activity assessment. (Vuori 2010.)

A healthy eating pattern plays an important role in preventing cardiovascular diseases including stroke. Nutrition intervention protocol emphasize on dietary modification such as increased consumption of fruits and vegetables (9-11 servings per day), dietary fiber (25 g per day) and regular intake of omega -3 fatty acids from cold-water fish at least 2 times per week, plant sterol or stanols (2 g per day), and nuts (1oz per day) and salt intake less than 6 g per day. (Retelny et al 2008.)

Individual should opt for lean red meat or poultry instead of processed meat, such as burgers, pies and breaded cutlets that are the main sources of saturated fat in the diet. Furthermore, removing visible fat and skin lessens saturated fat consumption remarkably. Curb intake of calories from food and drink. To achieve the significant improvements to diet, read nutrition label and compare similar foods searching for the brands that contain the lowest amount of saturated fat and salt. Salt intake can be curbed by not adding salt at the dining table or while cooking and by cutting down the intake of salt rich food items for example fries, hamburgers, sausages, salty bacons, crisps and daily processed foods for instance bread, breakfast cereals, ready meals and flavor enhancers (Beever & Lip 2007; Lim 2007). An average reduction in salt consumption of 10g per day to 5g per day can produce an average reduction in blood pressure of 5mmHg

(systolic) and 2mmHg (diastolic) (Luckson 2010). Oils rich in polyunsaturated or monounsaturated fats (sunflower, olive, rapeseed, walnuts and sesame) are preferable over saturated fat, such as butter, ghee, hard margarines. Valuable sources of fiber and antioxidants of wholegrain foods. (Jefferson 2006.) Studies advise that 3 servings a day have cardio-protective effects (Liu & Stamfer 1999). Soya food such as soya beans, soya milk comprise soya protein and plant estrogen, which unified assist in lowering the cholesterol level and protect the heart. Consumption of omega-3 rich fatty acids help to relax the blood vessels, hence lower blood pressure. Calcium intake in combination with sodium and potassium help to regulate blood pressure. Rich source of calcium includes semi or skimmed milk, low fat yoghurt, cheese. Moderate consumption of alcohol is recommended – maximum three units per day for men and two units per day for women, with some alcohol free days each week. (Jefferson 2006.)

Furthermore, the nurse should recommend an activity plan that emphasizes on increased physical activity and decreased sedentary behaviors. Physical activity (PA) is defined as movement of the skeletal muscles of the body which comprise of wide variety of activities. Structured or planned activity is considered as exercise. Physical activity is a vital element of health promotion and disease prevention which increases level of fitness and lowers risk of disease. Not only does physical activity aid in disease prevention, but also improves and sustains mental and cognitive functional capacity to all ages. To obtain a recognizable health benefit, at least 30 minutes of moderate activity is recommended daily. Moderate activities include brisk walking, cycling, weight training, moderate house works and gardening. (Slack 2006.) More information on guidelines about physical activity is shown on table 1 and 2 in the appendix. In addition, reduced risks of total, ischemic and hemorrhagic are related with moderate and high levels of physical activity (Vuori 2010).

Aerobic physical activity (PA) such as stair climbing decreases resting blood pressure in healthy individual, a mean reduction of systolic pressure 2.4 mmHg and diastolic 1.6 mmHg. A high amount of PA increases high-density lipoprotein cholesterol and decreases serum triglycerides. Other benefit associated with PA is increased glucose tolerance and lower risk of type-2 Diabetes. (Vuori 2010.)

Measure blood pressure frequently as it is the only way to know whether your blood pressure is high. Appendix 3 shows normal, at risk, and high pressure levels. (CDC 2014b.)

7.2.4 Social support in self-care

Social support is a positive influence by significant others or friends on an individual's behavior in following the recommended preventive plan. Significant others can assist in providing the recommended meal plan, or act as a companion in an exercise program. The nurse needs to inquire from the patient about support persons who are available in modelling good health behaviors. The nurse should keep in mind the importance of involving support persons in the counselling. (Peterson et al 2005.)

7.2.5 Support through counselling

Intensive behavioral counselling involves scheduled individual or group face to face meetings with a nurse. For instance in smoking cessation, nurses should be knowledgeable about the diseases and conditions caused by smoking so that cessation advice may be linked to the patient's medical condition. NICE recommends that nurses should advise patients who smoke to stop and refer them to an intensive support service. (NICE 2008.) Using a non- judgmental, non-confrontational approach, it is the responsibility of nurses to remind smokers at every suitable opportunity that quitting is the single most thing they can do to improve their health. Combining behavioral support and pharmacological treatment is considered to be the gold standard for smoking cessation. There are currently three front- line treatments for tobacco addiction. These include nicotine replacement therapy, bupropion and varenicline. (NICE 2008.) Nurses assisting smokers to quit should use a carbon monoxide (CO) monitor routinely. They are potentially useful in motivating smokers to become and remain abstinent, and for confirming claims of abstinence. In the same way Individuals with hypertension

can be counselled to restrict alcohol intake to 21 units per week for men and 14 units per week for woman (Williams et al, 2004).

7.2.6 Supporting self-care using pharmacotherapy.

Thiazides diuretics are mostly recommended for patients with unproblematic hypertension. Nevertheless, most individual with hypertension demand two or more anti- hypertensive drugs such as thiazides diuretics, angiotensin converting enzyme inhibitors (ACEIs), Angiotensin II Receptor Blockers (ARBs) and calcium channel blockers (Chobanian et al 2003).

Anticoagulant therapy, for instance warfarin is advised for individuals with AF in prevention of cardio embolic stroke if they can stand that drug. Aspirin alone or Clopidogrel plus aspirin are recommended for those individual who cannot tolerate warfarin medication. (Bergman 2010.)

7.3 What is the benefit of patient education?

Patient education increases the competences and confidence of clients for self-care and management. Through patient education, transition of patients from being incapacitated to being independent in the health care process is attained. Furthermore, patients are motivated to be active learners instead of passive listeners. The client reaches their potential by gaining ability to maintain or improve their health when on their own. Patient education has manifested its potential to increase patient satisfaction, improve quality of life, guarantee continuity of care, decrease patient anxiety, lessen the incidence of complications of diseases and promote adherence to healthcare treatment plans. In addition, patient education increases the independence in activities of daily living and enables the patients to be actively involved in planning of their own care. (Bastable 2003.)

The benefits of patient education are extended to the role of nurses as educators. Educator role of nurses improves the job satisfaction on realization that the teaching actions have potential to advance therapeutic relationship with patients.

In turn, this will yield greater patient- nurse autonomy and increases accountability of nursing practice. (Bastable 2003.)

8 Discussion and conclusion

The result of this systematic literature review emphasizes on behavioral and life style change as a core element in the prevention of stroke disease. A number of modifiable risk factors such as physical inactivity, obesity, hypertension, hyperlipidemia, hyperglycemia, unhealthy diets, alcohol consumption and smoking were linked to incidence of stroke disease. Therefore, it is essential for nurses and adult population to be aware of the risk factors of the stroke disease and interventions to subdue them. Patient education is a key element in assisting people to learn health - related behaviors that they can adopt in day to day activities. Nurses should assume the role as an educator in prevention of disease and maintenance of health. Patient education is of numerous benefits to both nurses and patients.

Health education encourages patients to take charge of their health which ultimately save lives through prevention of disease occurrence. With better health, through focusing on preventing disease, people can live long and productive lives and reduce their health care costs. Furthermore, incorporating prevention will create healthier homes, work places and hence, have positive impact on communities and economy. Patient education provides guidance on reducing disability.

Self-care management is becoming a key component in the health care profession through patient education therefore, it is of great value to expand quality preventative services in both clinical and community settings. Secondly, policies and programs to empower people to make healthy choices should be intensified. Nurses should be trained well in principles of teaching and learning in order to become an effective educator especially in those cases where, patient have learning difficulties. Nurses with their holistic approach to deliver care should take on educator role and make it part of their professional field.

9 Ethical and authenticity issues

During the literature search process, the data collected from reliable and trustworthy sources was critically analyzed and interpreted. The information included in the thesis was referenced, cited and quoted where necessary to avoid plagiarism. The authors abided the evidence-based guidelines of conducting a systematic literature. The information used in this thesis manifests the truth by portraying the original authors' idea. Mutual understanding and respect was maintained throughout the thesis writing process among the authors. Authors had equal right to express their opinions while conducting thesis. This Bachelor thesis was supervised and peer reviewed often throughout the research process.

9.1 Limitations of the study

Only literatures published in English language were used during the process, thus the presence on language bias. A number of databases required passwords for entry; hence, the authors were restricted in the search. Some of the studies depicted wholesome abstracts, which might have provided an accurate and better answer to the research question; however, the full text was not available. Due to the scarcity of studies directly related to preventive measures on Stroke disease in the databases accessed, the authors had difficulty in the use of appropriate keywords stated in the thesis. Time restraint and obtainable resources bound the research process.

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APPENDICES

Appendix1. Physical activity guidelines

Source	Recommended Level of Activity
Centers for Disease Control	<p>Adults: 30 minute of moderate physical activity 5 or more days per week or 30 minutes of vigorous physical activity 3 or more days per week.</p> <p>Children: At least 60 minutes of moderate physical activity daily.</p>
Institute of Medicine	<p>Adults: 30 minutes of moderate activity per day provides some health benefits; 60 minutes of moderate physical activity per day is needed to avoid weight gain and accrue additional weight-independent health benefits.</p> <p>Children: 60 minutes of moderate physical activity daily.</p>
2005 Dietary Guidelines	<p>Adults: At least 30 minutes of moderate activity per day promotes fitness and reduces risk for chronic health conditions; 60 minutes of moderate to vigorous activity on most days of the week may be needed to prevent weight gain; 60-90 minutes of moderate activity may be needed to avoid regaining weight for adults who have previously lost weight.</p>

Appendix 2. Examples of Light, Moderate and Vigorous Physical Activity

Light Activities	Moderate Activities	Vigorous Activities
Casual walking , strolling	Walking 3-4.5 mph;	Walking 5 mph or faster
Bicycling less than 5 mph	purposeful walking	Bicycling 10 mph or faster
Stretching exercises	Bicycling 5-9 mph on level terrain	or uphill
Weight training (Light workout)	Yoga; general exercises	Circuit weight training
Golf(riding powered cart)	Weight training	Most competitive sports(e.g., football, basketball, soccer)
Playing catch	Golf(wheeling or carrying clubs)	Heavy housework (e.g. moving furniture, carrying heavy objects)
Routine housework	Softball, shooting baskets, coaching	Jumping rope, running, inline skating at a fast pace.
Playing video games on a computer.	Moderate housework (e.g. scrubbing floors, washing windows)	Gardening (heavy shoveling, digging ditches)
Gardening (eg, weeding and pruning while sitting or kneeling)	Skateboarding, playing on school playground equipment	Shoveling heavy snow
Using a snow blower	Gardening (e.g. raking the lawn, weeding while standing)	Pushing a non-motorized lawn mower
Using a riding mower	Shoveling light snow	
	Pushing a power lawn mower	

Appendix 3. Example of normal, at risk and high blood pressure level.

Blood Pressure Levels	
Normal	systolic: less than 120 mmHg diastolic: less than 80mmHg
At risk (pre-hypertension)	systolic: 120–139 mmHg diastolic: 80–89 mmHg
High	systolic: 140 mmHg or higher diastolic: 90 mmHg or higher

Appendix 4. Example of standard weight with BMI for adult.

BMI	Weight Status
Below 18.5	Underweight
18.5 – 24.9	Normal
25.0 – 29.9	Overweight
30.0 and Above	Obese