



PEDIATRICS CARDIOVASCULAR DISORDERS

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<p>Abstract:</p> <p><i>Background:</i> Cardiovascular diseases are disease of the heart and the blood vessel, they are not communicable diseases or transmittable from one person to another and are prolonged in nature. It is caused by either modifiable or non-modifiable factors in paediatrics. This research would examine the following questions: (1). What are the risk factors for cardiovascular diseases in children? (2). What interventions for cardiovascular diseases in children exist? and (3). Role of nurses in promoting health of paediatrics with cardiovascular diseases?</p> <p><i>Method:</i> The articles were analysed using a deductive content analysis. Framework used for this study is the Nola J. Pender Health promotion model. Health promoting behaviour is the target act directed towards achieving a positive health outcome like ideal well-being, personal fulfilment, and productive living. A total of 24 articles collected from Ebsco-Academic elite, Science direct, Pub-Med, SAGE Journal and Google scholar was used to analyse the findings and the method used was qualitative content analysis: literature review.</p> <p><i>The findings</i> show that multifactorial interventions are increasingly important toward the management of high risk factors for CVD. abnormalities are found also in children, although the precise genetic, epigenetic, or environmental basis are unknown but genetic factors are being recognized to have important role. It is important in childhood that cardiovascular health is promoted to avoid cardiometabolic outcomes in adulthood by encouraging healthy eating habit, increased physical activity and reduce screen time. The role of nurses is important in facilitating patient's lifestyle changes as proven by researches, it was found that nurse support program is effective through regular contact and encouragement to supporting lifestyle changes.</p> <p><i>In conclusion</i>, cardiovascular disease is world most killing diseases, although some paediatric may get it through hereditary and others environmental factors. However, the most underlying cause of cardiovascular diseases both in children and adult is associated to lifestyle, inactiveness and diet. Nurses present themselves as a role model through healthy choices, continuing education and further research on their role in paediatrics CVD and its risk factors is recommended.</p>	
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ACRONYMS

NCDs	Non-Communicable Diseases
COPD	Chronic Obstructive Pulmonary Disease
WHO	World Health Organization
CNCDs	Chronic non-communicable diseases
CVD	Cardio Vascular Disease
HPM	Health Promotion Model
HBM	Health Belief Model
HP	Health promotion
BMI	Body mass index
MI	Myocardial infarction
CHD	Coronary heart diseases
IHD	Ischemic heart diseases
BF	Body fat
PA	Physical activities

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Dedication

Dedicated to my beloved twins: Aliyah & Alicia

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My unmeasurable thanks go to God Almighty who has been with me through every journey, His grace kept me and He has been my present help in times of need. And to Dr Pamela Gray, she has been a true teacher to me and I am grateful for her supervision, encouragement, reviews and extensive support that brought this thesis writing to fulfillment.

To my parents and siblings, thank you for being the pillars behind my wall, to my friends: only God can reward you for your unlimited support.

.... And to that person that desires education but lacks the resources, this is for you.

1 INTRODUCTION

Cardiovascular diseases are non-communicable diseases (NCD's) and are prolonged in nature. It progresses slowly and do not result from acute infectious causes. Non-communicable diseases are by far the leading cause of death in the world (WHO, 2013). Increase in the occurrence and an early onset of coronary artery disease is predictable because of the increased incidence of childhood obesity. However, the clinical atherosclerotic cardiovascular disease in obese children are lacking, it is important to use assessment tools in early detection of atherosclerosis. Being overweight in adolescent age is a precursor for coronary artery disease (CHD) and premature cardiovascular damage. While the related risks cause large burden to society by significantly increasing morbidity and mortality (Bibbins-Domingo et al, 2007; Raghuv eer, 2010; Doss et al, 2013).

In Finland, cardiac diseases affect many people, and they are seen to be one of the main cause of deaths (Puska et al, 2009). Modern lifestyle, urbanization and affluence affect the way exercising is performed, this inactiveness is an underlying factor for obesity that might result to cardiovascular diseases. It is added that people with prediabetes, diabetes or metabolic syndrome are exposed to high CHD risks factors. (Trustwell, 2017). Educating patient is vital when looking at the nursing care of cardiac patients, despite the patient having a myocardial infarction or has been diagnosed with a coronary artery disease, it is important that patients are able to understand their illness, manage and recognize symptoms that come along with it. Generally, there is a need for lifestyle changes. (Strömberg, 2002). Over time, coronary heart disease may start restricting the blood flow to the myocardium, hence causing myocardial infarction and resulting to death. Normally, it has been identified as a lifestyle disease of the higher income western countries, with their lifestyle of poor nutritional value, lack of exercise and the high use of alcohol and smoking. However, evidence of calcification is also found in young people. Inappropriate nutrition is connected to chronic heart diseases primarily with conditions such as high blood pressure and high cholesterol that related to numerous nutritional factors (Mann, J. & Trustwell, S. 2007; Truswell, 2017; WHO, 2014).

Genetic, physiological, environmental and behaviours factors as a combination can eventually result in cardiovascular diseases. Furthermore, either from unhealthy diets, physical inactivity, exposure to tobacco smoke or the harmful use of alcohol, all children, adult and the elderly are vulnerable to the risk factors leading to cardiovascular diseases. Cardiovascular diseases with the most deaths yearly (17.7 million) (O'Toole et al, 2008; WHO, 2017). Common cardiovascular conditions of childhood could be modifiable or non-modifiable, the common non-modifiable types found in children are Arrhythmia, Deletion Disorders, Cardiomyopathy, High Blood Pressure (HBP), Heart Failure, Kawasaki Disease, Congenital Heart Defects, Heart Murmurs, Stroke, Rheumatic Fever. (Heart.org, 2017).

The aim of this research is to understand more about cardiovascular diseases in paediatrics, their causes. Specifically, the study focuses on children and the nursing intervention through prevention and management of cardiovascular diseases and the risks factors associated with it. Since children are so vulnerable and could hardly care for themselves, parents and healthcare professional play a big role and should work together in the protection against high risk factors exposing them to cardiovascular diseases. Paediatrics is defined according to Medicine.net (2016) as the field of medicine that deals with the health of infants, children, and adolescents, their growth and development; and their opportunity to achieve full potential as adults. The term paediatric is a scientific name which also refers to children of age 0 to 18 years. Most of the decision is mandated by the parent of the child regarding their wellbeing and other important things involved in everyday living. The word paediatrics or children will be used interchangeably in this thesis.

The study is conducted as a literature review, which is a thorough, clear, unbiased method of evaluating useful published literature supporting a study (Rhoades 2011, p63). It also aims to expand and understand the variables underlying paediatrics behaviour toward efforts for more effective intervention strategies for their long-term health promotion. This thesis is focusing on paediatrics and modifiable cardiovascular conditions in general.

2 BACKGROUND

This chapter starts by introducing cardiovascular disease as a non-communicable disease, it then continues to discuss different types of cardiovascular disease, risk factors, and how cardiovascular diseases can be managed or prevented. This chapter finishes with exploring nursing interventions aimed at family support.

Although there has been high burden of mortality and morbidity from cardiovascular diseases, there has not been a strong concern to its improvement. Of 57 million deaths recorded in 2008, 36 million occurred because of non-communicable diseases. Hence the conduction of a survey on how to prevent and control the epidemic commenced (WHO, 2012). Paediatric health care in relation to congenital heart disease (CHD) is a major concern and has an important effect on morbidity and mortality of infant around worldwide (Yeh et al, 2013).

Modern lifestyle, urbanization and affluence affect the way exercising is performed, this inactiveness is an underlying factor for obesity that might result to cardiovascular diseases. With an increasing BMI (Body mass index), obesity could lead to myocardial infarction due to an increased body fat and associated risk factor such as high blood pressure, high level of lipid, insulin resistance and type 2 diabetes mellitus. Dietary factors can impact Coronary heart diseases (CHD), it is added that people with pre-diabetes, diabetes or metabolic syndrome are exposed to high CHD risks factors. (Trustwell, 2017).

2.1 Cardiovascular disease as a non-communicable disease

Cardiovascular diseases as a non-communicable disease can result from combination of these factors including Chronic Obstructive Pulmonary Disease (COPD), high blood pressure, diabetes, stroke, cancers, obesity and many others. Some of these risk factors such as elevated blood sugar or blood pressure, physical inactivity, excessive weight gain, elevated lipid levels, tobacco uses or exposure to smoke, may be prevented or eradicated by making a lifestyle change. Otherwise may increase the risk of morbidity and mortality from cardiovascular diseases. It is added that Cardiovascular diseases could be caused as a result of various factors, while it is essential to understand that stressors such as heavy

physical exertion and severe emotional stress could trigger the onset of an acute situation such as acute myocardial infarction (MI), unexpected cardiac death, and stroke (Nelson et al, 2015; Tofler et al, 2006). The world distribution of global deaths is shown in figure 1 below. Chronic non-communicable disease (CNCDs) which are comprised of cardiovascular conditions such as primarily heart disease and stroke, some types of cancers, chronic respiratory conditions and type 2 diabetes affect individuals of all ages, nationalities and status and are approaching an epidemic ratio worldwide. Approximately 60% of annual deaths are due to the above stated conditions (Daar et al, 2007).

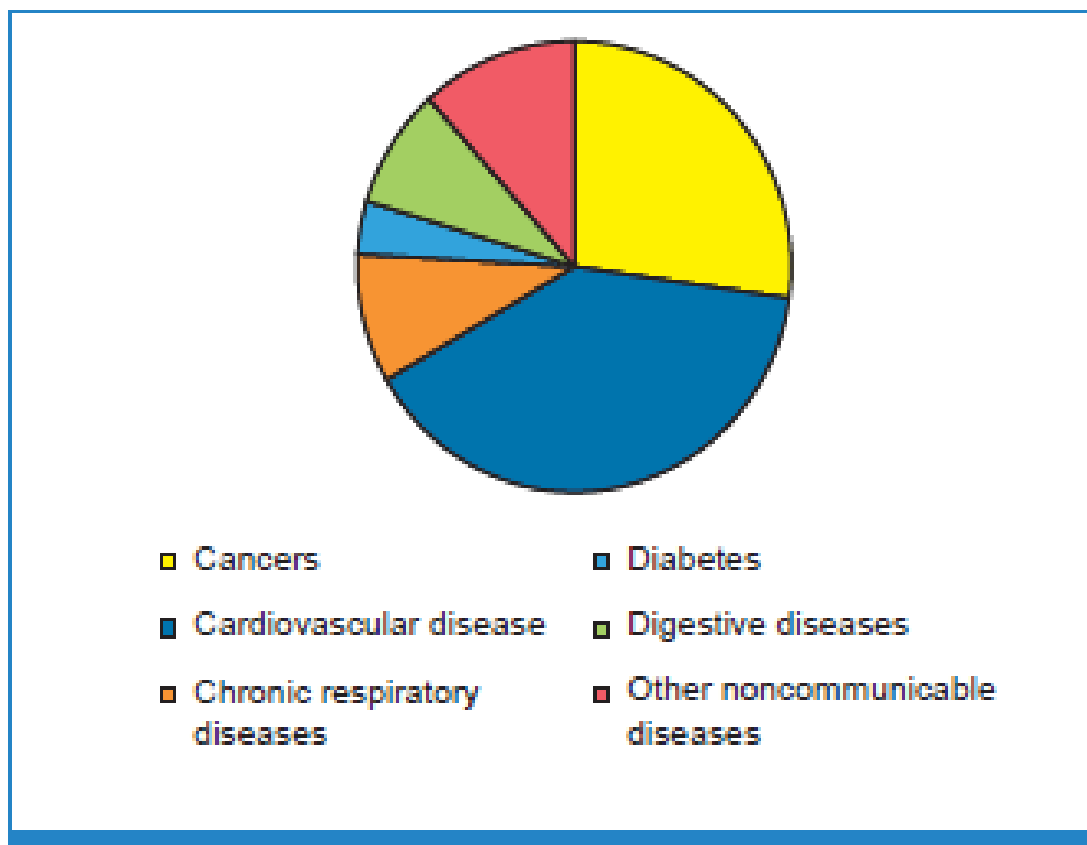


Figure 1. Global. Deaths percentage. (World Health Organization, 2011)

2.2 Cardiovascular diseases

According to WHO (2017), Cardiovascular disease (CVD) is defined as any abnormal condition characterized by dysfunction of the heart and blood vessels and there are 6 major types of cardiovascular diseases such as coronary heart disease, cerebrovascular disease, congenital heart disease, deep vein thrombosis and pulmonary embolism, peripheral arterial disease, rheumatic heart disease.

Cardiovascular diseases are caused as a result of multiple underlying factors, which includes blood pressure, total and high-density lipoprotein cholesterol, smoking, glucose intolerance, and left ventricular hypertrophy (Anderson et al, 1991). Bromfield et al, (2013) stated that elevated blood pressure is a relevant risk factor for cardiovascular disease and death, there has been misconception of high blood pressure and its effect to be a disease exclusively for economically developed nations. It was added that is important to lay a new emphasis on the heavy toll of elevated blood pressure around the world. Kamran et al, (2015) added that high blood pressure is an important risk factor for CVD which is a major cause for over 30% deaths and mortalities across the world.

Freedman et al, (1999) added that overweight, high lipids, high blood pressure, insulin resistance are the four main metabolic changes which increase the risk of cardiovascular diseases. However, high blood pressure which account for 19% of deaths worldwide serves as a leading metabolic risk factor followed by other causer of CVD which are overweight/obesity and elevated blood sugar. Children who are overweight have a harmful levels of blood sugar, blood lipids, blood pressure and long-term changes in corresponding weight are thus associated with changes in these risk factors. Children who are overweight are likely to experience various chronic diseases in later life due to fatty veins, raised abrasions, and calcifications in the aorta and coronary arteries.

Manning (2016) states that, NCDs causes are multifactorial, and develop from combination of underlying, modifiable or non-modifiable and intermediate risk factors. The study shows that cultural, socio-economic, political and environmental influences, as well as aging population, globalization, urbanization and the change in nutrition contribute towards the increase in NCDs such as Cardiovascular diseases in developing countries. Urbanization tend to influence lifestyle as individual crave for unhealthy foods, less physical

activities, smoking and excessive usage of alcohol. The high occurrence of modifiable or behavioural risk factors combine with age, gender and race leads to an intermediate risk factor such as high blood pressure, elevated blood cholesterol, overweight, increased blood sugar.

Modifiable behaviours, such as ineffective physical activity contribute 1.6 million deaths yearly, while unhealthy diet of excessive salt intake cause 4.1 million annual deaths, usage of tobacco attributes for 7.2 million deaths every year which include the effects of exposure to passive smoke and the harmful use of alcohol causes over half of 3.3 million deaths, all increase the risk of NCDs (WHO 2017). Trustwell, (2017) added that to improve CVD, it is essential to follow the guidelines recommended to lower blood pressure through change in lifestyle and the uses of medications. Kwa et al, (2017) concluded in their hospital research that little is known about cardiovascular risk factors and occurrence in childhood psoriasis. It is added that among adults with psoriasis, conditions which includes diabetes, obesity, hypertension, ischemic heart disease, peripheral vascular disease, atherosclerosis, dyslipidaemia and metabolic syndrome has been observed. Another research added that it has been proven that increase in risk for morbidity and mortality of cardiovascular disease has been caused by metabolic syndrome, the clustering of these metabolic factors are more harmful to individuals. The factors comprise of abdominal obesity, insulin resistance, atherogenic dyslipidaemia, elevated blood pressure, proinflammatory and formation of blood clot in blood vessel (Kim et al, 2004).

Flynn, (2001) stated that hypertension as an important cardiovascular risk factor is not a common problem in children but certain groups of children are affected. It has a significant health consequences, specifically the tendency for high blood pressure in childhood that can leads to prediction of adulthood hypertension. Among causes of childhood hypertension are renal and cardiac disease. Due to these factors, it is generally possible to evaluate the hypertensive child in an intensive method that could make known both the underlying cause of hypertension and its severity. According to Khatib (2004), most of the risk factors for cardiovascular disease are associated with lifestyle and they can highly be controlled as illustrated in figure 2 below.

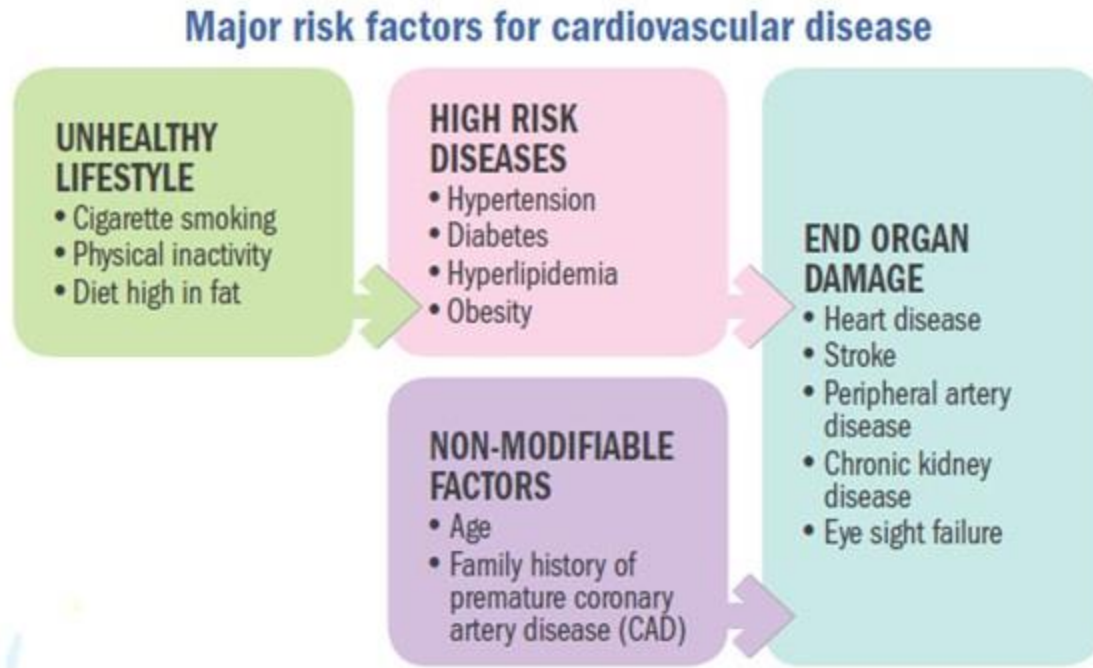


Figure 2. Major risk factors for Cardiovascular diseases

(Source: https://www.healthhub.sg/live-healthy/16/screening_heart_disease)

Cardiovascular diseases (CVD) and diabetes are increasing severely among overweight children and adolescents, it is one of the critical health problems of the 21st century with serious consequences (Deaton et al, 2011). A research conducted by Lida, et al, (2013) shows that death resulted from cardiovascular diseases was at a high rise among Japanese with a gender preference of men being extremely affected, which denote that elevated blood pressure is a risk factor for CVDs. Deaton et al, (2011) added that there is a serious consequence of diabetes and cardiovascular diseases due the rise in childhood obesity. The higher body mass index in childhood and adolescence is a risk factor associated with ischemic heart diseases (IHD) in adulthood. Meeto (2008) added that in region such as Latin America, the Middle East and Sub-Saharan Africa, of ischemic heart disease and stroke mortality is projected to tripling the next two decades. According to Deaton et al, (2011), population strategy and an individual/high-risk strategy are the two methods to CVD prevention globally. Sociological, moral, and medical grounds made up the population strategy, the society as an important factor for encouraging unhealthy behaviours and risk factors for CVD. The society being an entity affect health, because people with health challenges belong to same society with an unknown cause of poor health. Thus, it is superficial to only treat cases or individual with high risk. It is further added that people

with moderate risk made up the largest group and will suffer the most adverse health, therefore an effective prevention entails changes that includes the whole population.

2.3 Paediatric cardiovascular diseases

Cardiovascular conditions of childhood could be modifiable or non-modifiable, the common non-modifiable types found in children are Arrhythmia, Deletion Disorders, Cardiomyopathy, High Blood Pressure (HBP), Heart Failure, Kawasaki Disease, Congenital Heart Defects, Heart Murmurs, Stroke, Rheumatic Fever.

Arrhythmia; are irregular heartbeats, some need to be treated while many does not, Deletion disorders (DiGeorge Syndrome and Velocardiofacial Syndrome) is a genetic immune system disorder causing a high percentage of children born with heart defects. Cardiomyopathy is a chronic disease that is caused by inflamed heart muscle and affects the functionality of the heart. High Blood Pressure is a disease of the CVD that affects adults, children, adolescence and even babies can have it. Children too can experience Heart Failure; a condition that affect the functionality of the heart, early diagnoses, treated and cured can be achieved in younger children. Kawasaki Disease; this illness can lead to long-term heart complications in childhood. Congenital Heart Defects; it is heart defect that can be established since birth but with intervention, the child stands a better chance of living a normal adult life. Heart Murmurs; it is a defect in heart valves or holes in the heart walls causing an abnormal sound. Innocent murmurs are common in children, and quite harmless. Stroke; is caused by blood cloth that travels to the brain, when this cardiovascular problem occurs in infants and children it big challenges for parents. Rheumatic Fever; is inflammatory infection that occurs after strep throat, when affects the heart, could cause permanent damage (Heart.org, 2017).

Ischemic heart disease was found to be a cause of infants' death in 1921-78 due to poor nutrition in early life increasing vulnerability involved poor living conditions. Several of the cardiovascular consequences that describe the onset of adult obesity are preceded by abnormalities that commence in childhood. In the United States, obesity is nowadays the most predominant nutritional disease of children and adolescents. It has been proven by research over the last 40 years that most of the clinical problem of CVD occurs in adults.

However, there is an increasing indication that the process of atherosclerotic CVD commences in childhood and it progresses throughout the life span, atherosclerosis leading to coronary heart disease is of complex origin. The development of atherosclerotic disease and the growing severity is not only related to the presence and extent of cardiovascular risk factors but also the persistence of its risk factors over (Daniels et al, 2008; Dietz et al, 1998; Barker et al, 1986).

Kavey et al, (2003) found in their research that the already circulation guidelines for Primary Prevention of Cardiovascular Disease does not address the situation in children, whom should have been an important area of focus. It has been proved that it is importance to known risk factors for atherosclerotic disease in children and young adults. The result from a pathological study on death of children and young adults' shows that the level of atherosclerotic lesions after sudden death of children and young adults correlate positively and significantly with established risk factors, namely low-density lipoprotein cholesterol, triglycerides, systolic and diastolic blood pressure and body mass index. It is evidential that paediatric as young as 4 years could have an underlying risk for coronary artery; a cardiovascular diseases due to obesity and high blood pressure. With an increase in childhood obesity, age 6-17 are diagnosed with being overweight. Overweight is of specific concern due to the connection between obesity and hypertension, dyslipidaemia, and type II diabetes mellitus starting in childhood. However, this study has it focus on modifiable causes.

3 THEORETICAL FRAMEWORK

This chapter discusses nursing model that support and gives detailed purpose as to why the underlined research questions exist in relation to the topic of cardiovascular diseases. The universal purpose of a theory is to make research results meaningful and interpretable, and theories give researchers chance to join evidences and observations to an orderly system (Dunn, 2004). The nursing theory chosen to support this research is The Health Promotion Model (HPM) that was designed by Nola J. Pender, and it is clearly emphasized that helping patients to learn how to care for themselves and make healthy choices is an important role of nurses. Whereby they take part in their own self-care thus preventing illness through their behaviour and choices (Pender et al, 2011). Nola J. Pender's Health promotion is vital for everyone and public health. According to Srof et al, (2006) the health promotion model denotes a theoretical perception which explores factors and relationships that contributes to health-promoting behaviour and thus enhances health and quality of life.

Health promotion and disease prevention are two corresponding processes, with an important difference between them. Pender et al, (2006 & 2011), explained Health promotion as a behaviour that is motivated by having desire to increase well-being and realise human health potential, while disease prevention is the behaviour inspired by the desire to effectively avoid illness, early detection, or maintain functioning with the limitations of illness. According to Pender et al, (2011), HPM was designed to give a holistic understanding of how a person interacts with their environments, both interpersonal and physically as they seek health. As seen in the figure 3 below that is representing the model. In revived version of Nola J. Pender (2006), identified the uniqueness and similarities of Health Promotion (HP) and disease prevention.

3.1 Nola J. Pender's Health Promotion Model

In her work, Nola Pender observed that it is after when acute or chronic condition occurs to a patient before professional intervention is applied. With this convincing evidence, she concluded that the quality of a patients' life could be improved by the prevention of problems before it occurs, and that money channelled toward health care could be saved

by the promotion of healthy lifestyles. Health Promotion Model is a supporting framework that has been used in over 100 nursing research studies (Srof et al, 2006)

Alligood. & Tomey (2010), note that HPM has a similarity in the construction of Health Belief Model (HBM), however is in the limitation of explaining disease prevention. HPM is different from HBM whereby HPM does not involve fear or threat as a source of encouragement for health behaviour. Base on this fact, HPM broadens to strengthen behaviour for promoting health and potentially applies across the life span.

HPM is a model that focused on positive motivation which can be used as a basis to structure nursing protocols and interventions and have a main purpose of assisting nurses in understanding the major determinants of health behaviours. For nurses to promote health, their focus should be on understanding and addressing the most anticipating variables of given health behaviours. According to this model, health is defined as a positive dynamic state rather than a merely absence of disease with focus at increasing a patient's level of well-being. Avoidance as a factor makes this specific model useful for this research mainly because “avoidance oriented models of health behaviour has limited usefulness in encouraging overall healthy lifestyles mostly in children, youths, and young adults, who often perceive themselves to be invulnerable to illness” (Pender et al, 2011). This is because a person's characteristics and experiences is unique and personal that affect subsequent actions. Behaviour of health promotion is desired behavioural outcome. The health promotion model describes human nature as multidimensional as they interact within their environment to pursue health. The model has three areas of focus which are individual characteristics and experiences, behaviour-specific cognitions and affect, and behavioural outcomes. These behaviours are expected to result in better health, improved functional ability and better quality of life at all stages of development.

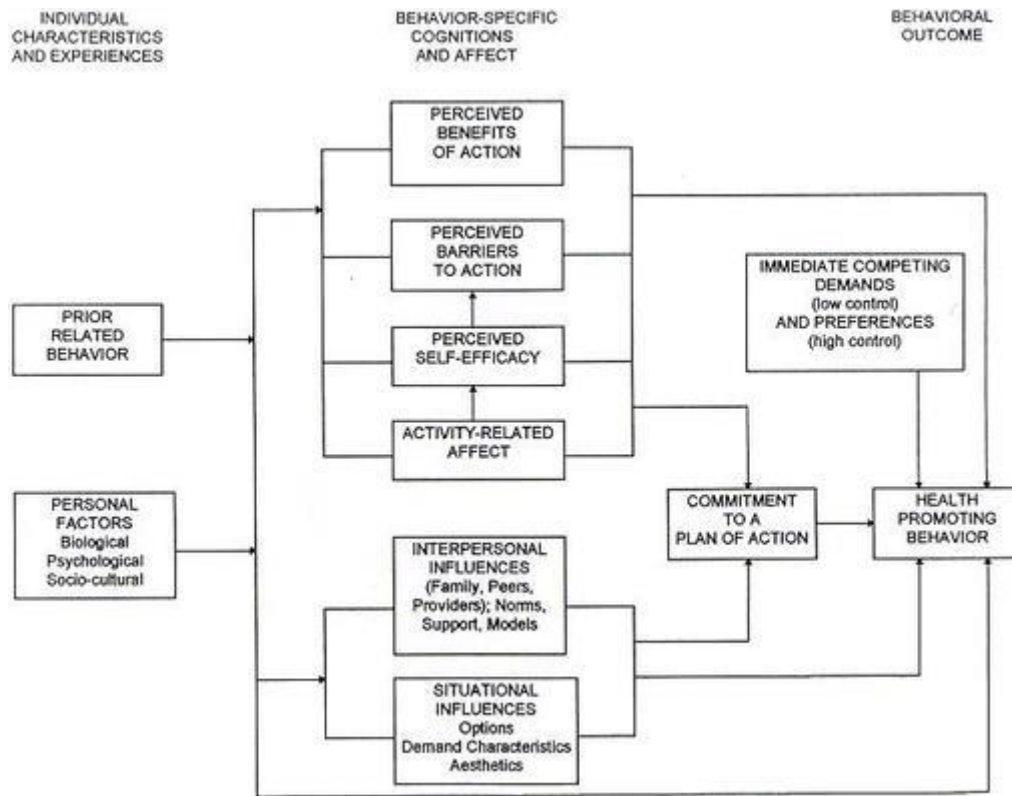


Figure 3. Health Promotion Model; Graphic courtesy. (Srof et al, 2006).

The main concept as seen the figure 3 above implies that to promote health, an approach to wellness is required whereby there is need of behaviour motivation by which a person wants to improve their wellbeing and actualize human health potentials. HPM has its basis in social cognitive theory that describes the nature of behavioural change within the framework of larger social structures, nature of human intervention, or the ability to control event of life and it is explained as a tragic reciprocal relationship between behaviour, interpersonal factors (cognitive, affective, biologic), and external factors (Srof et al, 2006). In the three-main area of focus, it can further be explained as previous related behaviour and personal factors, how action, barriers and self-efficiency is perceived and interpersonal or situational impacts. It is very crucial to be committed to a plan of action, have an immediate competing demands and preferences thus promoting health. (Allgood. & Tomey, 2010).

Table 3: Key Concepts in Nursing Defined as a Basis for the Health Promotion Model

<p>Person</p>	<p><i>Person is a biopsychosocial organism that is partially shaped by the environment but also seeks to create an environment in which inherent and acquired human potential can be fully expressed. Thus, the relationship between person and environment is reciprocal.</i></p> <p><i>Individual characteristics as well as life experiences shape behaviours including health behaviours.</i></p>
<p>Environment</p>	<p><i>Environment is the social, cultural and physical context in which the life course unfolds. The environment can be manipulated by the individual to create a positive context of cues and facilitators for health-enhancing behaviours.</i></p>
<p>Nursing</p>	<p><i>Nursing is collaboration with individuals, families, and communities to create the most favourable conditions for the expression of optimal health and high-level well-being.</i></p>
<p>Health</p>	<p><i>Health in reference to the individual is defined as the actualization of inherent and acquired human potential through goal-directed behaviour, competent self-care, and satisfying relationships with others, while adjustments are made as needed to maintain structural integrity and harmony with relevant environments. Health is an evolving life experience. There are definitions for family health and community health that have been proposed by other authors.</i></p>
<p>Illnesses</p>	<p><i>Illnesses are discrete events throughout the life span of either short (acute) or long (chronic) duration that can hinder or facilitate one's continuing quest for health.</i></p>

Source: Pender et al, (2011).

From the model, there are fourteen theoretical statements that provides a foundation for investigative work on health behaviours. (App II). Health promoting behaviour is the target act directed towards achieving a positive health outcome like ideal well-being, personal fulfilment, and productive living. (Alligood. & Tomey, 2010).

3.2 Role of nurses in preventing paediatric cardiovascular diseases

“Educating the educator” is a self-coined word that illustrate the usefulness of nurses to get a formal knowledge that will empower them to attain an effective role in combating NCDs among which is cardiovascular diseases as a top killer. Although nurses are faced with global challenges and opportunities, to achieve this aim, a modification to the nursing curriculum is mandatory to meet the nurses’ needs of managing cardiovascular diseases. Nursing practice being an evidence-based care, it is important that nurse educationalists accept and include the existence of various realities of the human experience, in contrast to single fixed reality emphasized by quantitative research findings. Furthermore, to achieve an outcome of care in cardiovascular diseases, thoughtful, responsible and culturally sensitive communication must be ensured by the nurse educationalists. Nurses being a member of a multidisciplinary team and their ability to focus on multifaceted activities that address physical, psychosocial and lifestyle issues thus making their role in chronic disease management an important task. Their first-hand connection with patient makes their contribution crucial during evaluating of patient case management. Patient (parent as spoke person) being a part of own plan has an important role in promoting self-care management which includes medication, change in behaviour, pain control, adjusting to society, emotional reactions, learning to interpret changes in the condition and its consequences, and use of medical and community resources. It is evidential that taking patients’ views into consideration in their care creates a higher satisfaction, to improve health care, nurses need to engage in a global health dialogue through knowledge sharing (Meetoo, 2008).

According to The Nurses Code of Conduct: it emphasizes the standards, performance and ethics for which nurses must perform their duties, this includes making the care of people their first concern, treating them as individuals and respecting their dignity. It is equally

important that nurses protect and promote the health and well-being of people (The Code: NMC, 2015). When it comes to health promotion, Pender states the following are role of nurses' in health promotion: educating patients on how to enhance their fitness, improving their nutrition, managing stress. and emphasizing on good health behaviours and attaining the role of an advocate for community changes. The relevance of all these aspects put together is to formulate a holistic image that focus on assisting an individual in modifying their behaviour to reflect a healthy lifestyle. Another important factor in this model is to understand that it is the individual's perception, rather than any observed reality, that influences behaviour. This is achievable when nurses assess their own beliefs with the aim of achieving a healthy lifestyle (Pender et al, 2006; Pender et al, 2011).

4 AIM AND RESEARCH QUESTIONS

The aim of the study is to gain insight in to the subject of paediatric cardiovascular disease and understand the role that nurses play in the prevention and management of cardiovascular diseases in children.

4.1 Research Questions

1. What are the risk factors for cardiovascular diseases in children?
2. What interventions for cardiovascular diseases in children exist?
3. Role of nurses in promoting health of paediatrics with cardiovascular diseases?

5 METHODOLOGY

Methodology explain how a research is carried out, aims at establishing the procedure to be used in conducting a research study. The research methodology used by a researcher depends on the nature of their research questions Rogers-Dillon (2005). Elo et al, (2014) added that methodology helps to summarize the process and the approaches in which the author went through in collection of relevant information for the research and design used in presenting these research results. The author of this study is conducting a literature review as the method of research.

5.1 Data collection

Data collection is the process of gathering information that can answers the research questions by testing hypothesis and examining the outcomes of the research questions. It is carried out by collection of data from authentic and reliable sources and it is used to support claims concerning the authenticity /reliability of researcher's study (Elo et al, 2014). To answer this study questions, qualitative data approach through inductive content analysis is used.

Various data bases such as Academic Search Elite (Ebsco), SAGE Journal Online, Science Direct, Google Scholar, PubMed was visited to get an expanded view on types and availabilities of articles published under paediatrics and cardiovascular diseases. search phrases such “cardiovascular diseases” “cardiovascular diseases in children” “nursing support for family” paediatrics cardiovascular diseases” “nurse’s role in preventive measures” “cardiovascular risks factor in paediatrics” “cardiovascular diseases in children” “heart diseases in children” are used. It was observed that there are many associated articles and journal in most data base.

5.1.1 Inclusion and exclusion criteria

Secondary research method was used in this study by reviewing previous studies and articles, journals and empirical investigations that have relevant title suitable by search word and research questions. Collection of article was restricted using inclusion and exclusion criterial based on their relevance's on the selected data bases. The inclusion criteria were based on approved scientific articles related to this research topic, full text and

only publication in English, published articles from 2007 to 2017. Exclusion criteria includes articles not related to the research topic, paid articles and articles in other languages as seen in table 1 below.

Table 1: Illustrates the data collection processes.

Inclusion criteria	Exclusion criteria
Articles published articles from 2007 to date	Articles published before 2007
Article that are free	Charged articles
English articles	Other languages
Scientific article	Non-scientific articles
Articles with one of the keywords: relating to “cardiovascular diseases” “paediatrics” “risks factors”	Articles without one of the keywords: cardiovascular diseases” “cardiovascular diseases in children” “nursing support for family” paediatrics cardiovascular diseases” “nurse’s role in preventive measures” “cardio-vascular risks factor in paediatrics” “cardiovascular diseases

The Search Process

Due to the relevance of area of study, there were numerous related topic, however to narrow down the search, the above phrases were used in the process (Table 1) based on inclusion criteria. Abstract of the selected articles were read to determine its relations to the research question and the 24 articles listed below were selected to provide possible answers to the research questions.

5.1.2 Articles used for findings

The following articles were chosen based on the research questions.

1. A Richards, A. and Garg, V., 2010. Genetics of congenital heart disease. *Current cardiology reviews*, 6(2), pp.91-97.
2. Bhatt, Girish. (2017). American Academy of Pediatrics (AAP) Updated Guidelines on Hypertension in Children and Adolescents-Salient Features. 2. 10.21767/2572-5394.100038.
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5.2 Data analysis

Qualitative content analysis was used in this study to analyse the secondary research data extracted based on the inclusion criteria. Although several methods of analysis of results exist in qualitative research. Answers to the research questions were presented in the findings through thorough reading of the articles, the articles were read and divided into category in subcategories. Elo et al, (2008) explains Qualitative content analysis as method of analyses that aim at building a model to define the phenomenon in a conceptual form and are generally used in nursing studies. And can be either inductive or deductive that has three main phases: preparation, organizing and reporting. Content analysis focuses on analysing textual materials by placing its attention on words rather than numbers. Therefore, deductive content analyses was used in this study whereby content analysed was based on searching and identification of articles associated with this research keywords. In deductive content analysis, the organization phase includes development of grouping of matrix, in this process all data are reviewed for the purpose of content coding for the identified categories (Elo et al, 2014). Researcher of this study analysed the content of the textual materials by reading through articles.

Saldaña, (2015) added that each qualitative analysis is unique causing the analytical approach to be unique too, deductive creates a harmonized conceptual framework using coding in it process. A code can be regard as a word, phrase or sentence that describe an aspect of a data or captures the core or structures of a data. In this study, the provisional list of coding was derived beforehand by supposing and organizing the possible heading before reading through the 24 articles. The author was able to achieve this process while in the writing phase of the background chapter of this research study.

5.3 Ethical considerations

The author followed strictly the ethical guidelines of Arcada University of applied sciences and only secondary data were utilized. Articles and books used during this study were sort through Arcada library database and the library shelf. The study is written using strict scientific protocol. Thus, all retrieved information from different sources has been acknowledged correctly to avoid copy right violation and plagiarism. The articles used were read and interpreted using inductive content analyses.

6 FINDINGS

In this chapter, the author read through 24 selected articles for the findings during the data collection process and was able to provide possible answers to the following research questions: (1). What are the risk factors for cardiovascular diseases in children? (2). What interventions for cardiovascular diseases in children exist? and (3). Role of nurses in promoting health of paediatrics with cardiovascular diseases? The information acquired from the 24 different articles was analysed by the author and table 2 below provides specific answers for the categories and subcategories.

Table 2: Illustrates process of data analysis.

Research questions	Category	Subcategories	Article numbers
1. What are the risk factors for cardiovascular diseases in children?	Risk factors that leads to cardiovascular diseases	i. Genetics and environment factors. ii. Behavioural factors and psychological health consequences.	2,1,5,14,6,7,8,20,12,4,10, 18.
2. What interventions for cardiovascular diseases in children exist?	Intervention and lifestyle modification	iv. Nutrition/Diet interventions. v.Lifestyle changes.	17,16,19,23,22.
3. Role of nurses in promoting health of paediatrics with cardiovascular diseases?	Promoting health of paediatrics	vi. Nursing support for the family/ paediatrics parents. vii. Education as a preventive measure, nursing role in exercise, mobility and nutrition	3,21,11,24,17,13.

6.1 Risk factors leading to cardiovascular disease

Multifactorial interventions are increasingly important toward the management of high risk factors for CVD. Bhatt, (2017), state that American Academy of Paediatrics (AAP) released updated guidelines on how to screen and manage hypertension in early childhood, it recommends that healthy children from age of 3 years should be screen early for hypertension and then blood pressure (BP) should measure yearly. Obese paediatrics are at increased risk of Cardiovascular Disease (CVD) as they have elevated blood pressures, dyslipidaemia and insulin resistance. Risk factors for cardiovascular diseases are related with lifestyle and behavioural patterns resulting from young age. Therefore, to reduce the incidence of Cardiovascular diseases, children should be included in the plans, as they are at a vulnerable stage of development, thus they can be inspired to make suitable healthy modifications that in turn could influence the community at large (Divakaran et al, 2010).

Genetics and environment factors

Cardiovascular abnormalities are found also in children, although the precise genetic, epigenetic, or environmental basis are unknown but genetic factors are being recognized to have important role. These defects are important cause of childhood morbidity and mortality across the world (Richards et al, 2010; Fahed et al, 2013). In a WHO research, to study the connection of genetics and CVD, although there has been an increasing effort to manage the environmental factors associated with CVD. However, the understanding of the impact of genetics in CVD is becoming an important issue. It was observed that genetic could be responsible with some type of CVD and that hypertension contributes to blood pressure elevation. It is added that polymorphism affects CHD development in patient with type 2 diabetes because these two diseases are linked (WHO Human Genetics programme, 2017).

Research focusing on fitness among adolescent, indicated that low cardiorespiratory fitness (CRF) is a risk factor for cardiovascular disease. With an established risk factors that includes body mass index, waist circumference, blood lipids and blood pressure (Magnussen et al, 2012). Furthermore, Riner, et al, (2013) added that, children who already affected by a chronic disease can still participation physical acuties to enhance wellbeing. However, it is important prioritize their safety. To avoid undue risk for the child, it is

recommended depended on the severity of the CHD. Affected children can still follow these specific recommendations for physical activities such as for patients with mild forms CHD can take part in competitive sports and recreational exercise, for those with moderate forms of CHD- moderately intense sports should be considered. However, patients having severe forms of CHD energy-consuming exercise could damage than good.

An underlining causative factor for cardiovascular diseases such as atherosclerosis was investigated among Finnish adolescent by risk factor levels of elevated coronary heart disease. Subsequent coronary artery calcium (CAC) found in adolescence are predictors of adulthood CAC, Elevated adolescence LDL-C and systolic BP levels are independent. Thus, Elevated adolescence LDL-C and systolic BP levels are signifying that adolescence risk factor levels have a vital role in the onset of coronary heart disease (Hartiala et al, 2012). Hussein et al, (2016) added that non-pharmacologic treatment is an important part of well-being, this includes self-management, lifestyle changes and promoting proper health behaviours.

Behavioural factors and psychological health consequences

The onset of childhood obesity has been linked to numerous risk factors for cardiometabolic disease including elevated blood pressure and lipids causing a documented mental health consequences that includes low self-esteem, anxiety disorders, depression, and other psychopathologies problems. It is important in childhood that cardiovascular health is promoted to avoid cardiometabolic outcomes in adulthood. It added interventions within the school can improve health and academic performance of children from low-income families. (Sahoo et al, 2015; Laitinen et al, 2012; Hollar et al, 2010). A systematic review conducted by Hesketh et al, (2010) indicate that although most intervention were multifaceted in their approach but it is evidential that behaviours contributes greatly to obesity. Thus, it can be positively impacted in most cases whereby providing an important understanding into the most effective approaches for encouraging healthy weight from early childhood.

In their research, Danielsen et al, (2011), studied weight of obese and normal weight children within 7–13 years old and their approach towards physical activity, screen time, food

intake, blood parameters and the impact as cardio-metabolic risk. Their results show that screen time as a behavioural factor has a significant impact on obesity and cardio-metabolic risk indicators in children. In a research conducted by Jaquith et al, (2013), there is a possible transition among children of school age from being risk-free to at risk for cardiovascular diseases. It is estimated as early as age 2.88 years old child can develop the risk factor.

6.2 Intervention and lifestyle modification

Nutrition/Diet interventions

A research by O'Connor (2011) explained the importance of promoting healthy eating in children and how nurses play an important role in promoting good health in their patients. The study highlighted that balanced diet and physical activities are identified as the main keys in promoting good health in children. The study also highlighted the importance of encouraging children to choose healthy nutritious meal. It was observed that as children grow older, they tend to become independent in the type of foods they select to eat. If the children are not educated on the type of meal to choose which may reduce their risk of developing cardiovascular diseases, they may lean towards sweet unhealthy foods.

Nutrition is an essential part of a child's wellbeing, growth and development because growth rate is an indicator for adequate diet. It is evidential that manifestation of health problems in later life is association with childhood choice of poor diet together with inadequate physical activity patterns. These diseases are not limited to heart disease, obesity, bowel cancer, type 2 diabetes and osteoporosis. To avoid the risk for those stated chronic diseases in adulthood, healthy eating habit can establish at childhood. It is added that the nutritious habit of children from their childhood can affect future preferences and their ability to have a good eating habit in their adulthood. Nurses play a role model and acts as advocate to paediatric. Guiding young children to promote good eating will be beneficial to them which can help to reduce the risk of developing cardiovascular problems.

Higher energy is required by children because of their quick growth and activeness and it is in relation to their body size compare to an adult, food is needed to supply essential nutrients such as protein, calcium, iron and vitamins A and D. It is essential that a child's

diet include a balance between rich in fruit and vegetables and starchy foods such bread, potatoes, pasta, rice which made up two thirds of their diet while milk and dairy foods, meat, fish, eggs, beans and other non-dairy sources of protein made up the other third of the diet. For Illustrations, a serving of milk and dairy foods may contain 200ml of milk, 150g of yogurt or 30g of cheese. Energy is gotten from macronutrients (carbohydrates, fat, protein and alcohol) of food and drink is through oxidation. Children's fat intakes of no more than 35% of food energy is recommended because High intakes of saturated fat increase cholesterol that are associated to heart disease in later life. In her research, low fibre intake is observed in children four to ten year of age, however no specific DRV for fibre (found in cereal, bread, beans, lentils, fruit and vegetables and expressed as non-starch polysaccharide (NSP)) exist for paediatrics. Therefore, it is important to use age and gender specific reference data to interpret measurements of children. Medically, children that are above the 91st centile are categorized as overweight and those above the 98th centile are categorized as being obese in the UK. On the other hand, the public health 85th percentile cut-off points for overweight while the 95th percentile cut-off point is used for obesity, are generally used in Health Survey (O'Connor 2011).

The Health Implications of Overweight and obesity has associated with an increased risk of several conditions, such as cardiovascular disease, type 2 diabetes, high blood pressure and musculoskeletal system problems are often experience in adulthood.

In obese children, there has been linked with vascular disease in adult life such as high total cholesterol, these children are likely to become overweight adults particularly if they are overweight during adolescence or live with an obese parent (O'Connor 2011). A study by Moschonis et al, (2013) on "increased physical activity combined with more eating occasion is beneficial against dyslipidaemia in children". The study focused on the lifestyle of children between the ages of (9-13) in 77 primary schools in four large regions in Greece with a possibility to highlight the cardiovascular risk reduction strategies. The study considered the dietary intake, breakfast pattern, eating frequency, physical activity level, sleep duration, and socio-economic information. It discussed about the eating habits of children and how it can reduce the risk of obesity which is a factor associated with cardiovascular diseases in paediatrics. It was observed that children who have shorter sleep duration coupled with high intake of sugar sweetened beverages have been associated with HDL. The research showed that when the cholesterol level is significantly high,

it has been linked to cardiovascular diseases in children and adult. The study also showed a significant link between physical activities and cholesterol level which is a risk factor of cardiovascular diseases in children. The study also explained that when children have shorter sleep duration coupled with high intake of sugar-sweetened beverages there was an association with HDL cholesterol.

Geographic distribution of cardiovascular diseases has an associated with diet and life-style factor, according to systematic review conducted by Ricco et al, (2007). In which the positive effects of a Mediterranean diet over cardiovascular diseases is emphasized. It is added that, this diet can be use together with conventional drug therapy as a primary and secondary correctional lifestyle intervention.

Lifestyle changes

In a research conducted by Spear et al, (2007), they used 4 interventional approach in dealing with obesity in children. These approaches are prevention, structured weight management, comprehensive multidisciplinary and tertiary care intervention. To achieve this mechanism, healthy behaviour is encouraged while using technique to motivate patients and their families. However, care should be a child and family centred care. It is important to know that treating an overweight child is more than counselling, it is a complex process. It is expensive, difficult, frustrating and time consuming and often more than the walls of primary care provider office. It is further stated that evidence-base treatment is a serious health problem, this is important because there is risk of developing comorbidities seen in obese adult. Increase BMI in obese and overweight children because of rise in fasting serum glucose, insulin, triglyceride levels and the frequency of impaired glucose tolerance and systolic hypertension make them susceptible to CVD comorbidities. Dietary modification, behavioural therapy and increased physical activities is thus an important intervention for overweight and obese paediatrics.

To tackle this, the various contributing factors need to be considered rather than having one focus, diet correction and physical activity must be interwoven. Control of Portion size of food eaten by children. A recommendation of healthy eating and an active life should be encouraged among paediatrics in order to maintain a healthy weight. In United Kingdom, several interventional approaches have been developed to help children and

parents such as SmallSteps4Life for school-aged, The MEND programme has a two hours free meetings running twice a week and last for ten-weeks, where parents and their children from 5 to 13 years old are taught about food, comprises a balanced diet nutrition are encouraged to be more active; and are taught techniques to stay motivated and ensure the new lifestyle (O'Connor 2011).

Showell et al, (2013) conducted a research on home-based childhood obesity prevention, their aim was to review how effective is home-based interventions on weight, diet, physical activity and clinical outcomes. 6 studies were identified using various interventional scope such as diet/physical activities, combined intervention with primary care and consumer health informatics components, and with school and community components. They concluded that there is less effect in home-based child obesity prevention programs.

Benefits of being physically active contribute to physiologic stability, and support a person to actualize their physical performance potential. Maintaining regular physical activity depends on individual and social motivation within the day to day environment (Pender et al, 2006). Pender in Marriner & Alligood, (2010) explains that Pender's HPM acknowledged three motivational variables for health promotion behaviours which are activity related affects, commitment to a plan of action, and immediate competing demand and preferences. In the approach of intervention; Commitment to a plan of action is useful because it requires the client to select action plan to improve and support health behaviours built on own preference and level of change. This plan allows the child to have some control over own health, which also has the potential of enhancing the child's self-esteem, self-perception, and self-motivation.

6.3 Promoting health of paediatrics

Nursing support for the family/ paediatrics parents

The role of nurses is important in facilitating patient's lifestyle changes as proven by researches, it was found that nurse support program is effective through regular contact and encouragement to supporting lifestyle changes (Dale et al, 2009). When a child is

diagnosed with chronic disease, parents often experience anger, desolation, fear, uncertainty, helplessness or guilt due to shock. This might lead to difficulty in acquiring information or knowing the right questions to ask or the kind of help they required. It is essential to help them gain their confidence through professional empathetic support and an effective guidance because information on the illness, how to manage it, family-related and psychosocial matters is crucial to parents. There is need for social support and being able to partake in their child's care to regain control and the feel of being capable in the management of the illness. Though, there less achievement in the outcomes due to some unfulfilled parents' educational needs and the limited to their participation in care (Sanjari, et al, 2009).

Nurses has a great obligation in patient education, but not all has the required know-how. However, a good teaching has the ability and interpersonal skills of teachers that forms the core characteristics of good educators. An important requirement will include caring, stimulating, polite and well organized, also having a positive attitude towards education and a good sense of humour. In an effective nurse-patient relationship, nurses assumed the role of teacher who has subject and moral knowledge and skills with good ethics that requires being available to patients, and respecting patient as an individual and valued that patient's opinion in conversation. Also uses a variety of teaching methods that are creative and encourages every learner and making the environment a place that promotes learning by communicating through listening to children and being sensitive to them. A paediatric nurse needs to be knowledgeable in caring for children, understanding paediatric diseases and their treatment, also being up-to-date on kind of support needed by a child with a chronic illness and the family. Additionally, understanding disease management is important to provide effective patient education (Sanjari, et al, 2009). Knowlden et al, (2012) state that paediatric obesity is highly influenced by family and home environment, they aimed at investigating possible homebased intervention for treating overweight and obesity in children within 2–7 years old. Among the outcome sort are programmes incorporating educational sessions primarily aiming at parents as the intervention deliverer. Another Interventions method was the use of home-based, community based and health service combined with dietary and physical activity approach were used to prevent obesity a risk factor for cardiovascular diseases. In which home visits are made

by specially trained community nurse over a period of two years and pro-active telephone support between the visits (Water et al, 2011).

Elements such as self-efficacy and motivation are common to everyone. Thus, "Self-efficacy is an individual's belief in their capacity make a change such as Health related behaviour, and it is grounded in one's past success or failure in a specific activity. One's self efficacy is seen as predicting the amount of effort one will expend in trying to change" (Pender et al, 2006).

Education as a preventive measure, nursing role in exercise, mobility and nutrition

Water et al, (2011), observed that there is a strong evidence to support beneficial effects of child obesity prevention programmes on BMI targeted to children aged six to 12 years. to differentiate which of these components is most beneficial to the observed effects. Lifestyle Education for Activity Programme (LEAP) was designed to change both instructional practices and school environment to increase support for physical activities (PA) among girls. This method of intervention was specifically girls friendly and instructions are based on choice with health education lessons focuses on teaching required skills necessary for implementing and sustaining a physically active lifestyle. In the school based intervention, it was essential that the faculty and staffs were role models and increased communication about PA, with emphasizes on school nurse promotion of PA. It was observed that nurse-based and home-based intervention are more effective intervention for children 0 to 5 years while better outcomes observed was school-based and community-based interventions was effective for 6 to 18 years paediatrics. It was suggested by O'Connor (2011) that children can be educated through the school-based interventions about healthy eating habit that provide them with necessary skills in appropriate food choices thus helping them to develop a positive attitude to personal diet. Schools having the strong influence on the health of children, serves as an important organization where children socialize and a centre for range of community activity, therefore making it an ideal place for organizing obesity-prevention programs. Another source focuses on home-

based activities to support behaviour modification whilst a study emphasis the interventions through application of social and behavioural theory. It was added that there is need for additional research in this area of childhood obesity and its impacts.

When a child develops chronic illness, it requires that the whole family adjust to a new way of life to be able to manage the disease and it is important that the nurse has a comprehensive patient education competence. In order to effectively educate the families having children with chronic illnesses. Thus, with this knowledge, promoting nurses' professional training and to develop patient education is achievable. (Sanjari, et al, 2009).

Between pupils' parents and school nurses, cooperation is an important part of health promotion, so creating a trusting relationship contributes to easy and uninhibited cooperation. Cooperation between parents and school nurses has not been widely researched internationally. In their study, Mäenpää et al, (2008) investigate the knowledge of family nursing, perceptions Finnish parents' and their cooperation with school nurses. The results simplify the understanding of cooperation in school health services. It is added that parents have no knowledge about the task of school nurses and school health services. Parents are interested and wish to be involved in school nursing activities. Thompson et al, (2003) added that nurses have personal experience and also interchange knowledge with co-workers.

Pender et al, (2006), states that nurses must have the vital skills needed to guide their client and they are accountable for counselling patients about their health behaviours. From this study, health promotion is seen from three viewpoints based on my research questions; foremost 'What are the risk factors for cardiovascular diseases in children' secondly 'What interventions for cardiovascular diseases in children exist' and lastly 'Role of nurses in promoting health of paediatrics with cardiovascular diseases'. Pender et al, (2006) states that health promotion is an essential part of health care; it is an active desire to improve well-being. In 1986, WHO defined health promotion "as the process of enabling people to increase control over, and to improve, their health. To reach a state of complete physical, mental and social well-being, an individual or group must be able to identify and to realize aspirations, to satisfy needs, and to change or cope with the environment". To promote health, the risk of chronic illness cannot be ignored because health

promotion includes the health promoter that is health care personals and the client that is the patient being actively involved in care.

(Pender in Marriner & Alligood, (2010) explains that Pender's HPM acknowledged three motivational variables for health promotion behaviours which are activity related affects, commitment to a plan of action, and immediate competing demand and preferences. In the approach of intervention; Commitment to a plan of action is useful because it requires the client to select action plan to improve and support health behaviours built on own preference and level of change. This plan allows the child to have some control over own health, which also has the potential of enhancing the child's self-esteem, self-perception, and self-motivation.

Pender et al, (2006 & 2011) stated that physical activities have an important benefit that contribute to physiologic stability, thus assisting the individual to actualize their physical performance potential. Within the day to day environment, the maintaining a regular physical activity depends on individual and social motivation, when healthy diets and nutrition is promoted, large proportion of cardiovascular disease and it risks factors could be avoided. Food and physical activity choices are influenced by portion sizes, inactivity and underlying diseases. Emotional state of a person previously, during or after implementing of an action affects the outcomes of specific health behaviours. Also, other environmental influence culture, socioeconomic status adverting, the built human made environment and other obesogenic factors. Successful lifestyle change requires an understanding of the implication. When nurses are a role model in area of lifestyle changes, individuals are more likely to commit to an action when their behaviour influences other.

7 DISCUSSION

Discussion related to the findings and theoretical framework

Chronic health problems in children and adults has a strong association with early life behaviours as a major causative factor leading to cardiovascular disorders. People who are at high risk for cardiovascular diseases can make changes in biological and lifestyle risk factors for diabetes and CVD. To manage some of the risk factors for CVD and its long-term effects, it was observed that multifactorial interventional approach is required, these includes lifestyle changes, being informed, dietary choices. Medical implication of overweight and obesity has been widely researched, with various researchers sharing similar opinions, with claim that cardiovascular diseases could arise from overweight and obesity in children and other comorbidities such as elevated blood pressure, orthopaedic diseases, diabetes and, sleep disorders (King et al, 2006).

Education of only parents of overweight children had a significant impact on the health of their children compared with those in the children-only group. With almost 10% mean weight reduction in overweight children of parent-only group compared to children-only group. Having parents as a focus area has a long-term effect on the treatment of childhood obesity and was superior to the conventional treatment method. In another research, it states that when parents are involved in physical activities, it has motivational impact on their children. (Golan et al, 2004; Brunet et al, 2017) in agreement with Mäenpää et al, (2008) reports on the importance of involving parents in the care of their children through corporation of school nurse and parents. It was observed in Ranucci et al, (2017) research that parents play a vital role in increasing the physical activity level of their children, they also help to avoid choosing inactive lifestyle. It was added that the aim could be achieve through making change in the home environment, decrease the time their children spent on screen and sitting times.

It is added that nurses' roles especially those at school were specified as being advocate for policies that improves the health of children. This includes primary prevention of cardiovascular disease, since these diseases can be a progressive illness which develops over a long period of time, school nurses also have a role for advocating for the recommendations of physical education, and physical activity as part of school curriculum, noting that

physical inactivity is a major contributor to being overweight that is a risk factor for cardiovascular diseases (King et al, 2006). King et al, (2006) report is correlated with that of O'Connor, 2011; Dale et al, 2009; Sanjari, et al, 2009) which state that School nurses can likewise integrate health promotion and primary prevention actions with focus on the unique needs of the population such as physical education and development of recreational facilities which can be accessible to larger percentage of school children.

Aires et al, (2016) explore school-based exercise intervention programme on cardiovascular risk factors using body fat (BF), metabolic profile and PA. They concluded that school-based interventions through the provision of personalized dietary counselling can contribute to preventing obesity in youth. Hence, this form of intervention can be successful in health promotion behaviours by increasing the frequency of PA and that personalized support for children can help change habits and generate important physiologic changes that can reduce atherosclerosis risk factors in later life. This in turn align with findings of Ricco et al, 2007; Spear et al, 2007) that emphasis the important of well-being through healthy dietary choices, exercising as an interventional measure.

Pender's model of health promotion helps to predict the health behaviour, The revised model is based on social learning theory which was modified to identify the factors associated with exercise behaviour where exercise is a health-promoting behaviour that is influenced by personal and behaviour- specific cognitions and affect. Behaviour- specific cognitions and affect are categories of major motivational significance and are critical for intervention, as they are subject to modification through nursing actions. (Heydari, et al, (2014).

Through seeing a client as an individual and creating interventional plan that suit them is in relation to these components; self-efficacy, perceived benefits, situational influences, affects related to behaviour and commitment to action structures of Pender's health promotion model, being physical active and living a healthy lifestyle has a vital role in everyone's life. Because the goal of encouraging children to lead a healthy lifestyle by making appropriate diet choices and educating them on weight control. The person will not only understand own present health situation but will also be able to make lifestyle decisions, and suitable changes to reach the ideal health. When effective education is given

to a person, a satisfaction of her needs, an increased quality of life. The health care personnel must promote the person health in the improvement and progress of his capacity to get effective self-care. (Pender et al, 2006).

In summary, earlier studies revealed that there is a critical shortage in cardiac related knowledge, and this creates an overall shortage in adopting healthy lifestyle behaviours. As it has been analysed by many researchers, improving people's knowledge about cardiac problems and its risk factors is essential, in order to encourage healthy lifestyles which is the best preventive strategy against coronary heart diseases.

8 CONCLUSION

The findings of this study were based on three research questions which aimed at exploring and answering these questions: (1) What are the risk factors for cardiovascular diseases in children? (2) What interventions for cardiovascular diseases in children exist? and (3) Role of nurses in promoting health of paediatrics with cardiovascular diseases?

As a nurse, our role is incomparable as we are the largest group of workers in health care system worldwide. We inspire children, families, co-workers and others in communities to be active in combating cardiovascular diseases and its risk factors thus promotion of care strategies to achieve and maintain healthy lifestyles (Budd, 2015).

Cardiovascular disease is world most killing diseases that is not transmittable, although some paediatric may get it through hereditary and other environmental factors. However, the most underlying cause of cardiovascular diseases both in children and adult is associated to lifestyle, inactiveness and diet. With several comorbidity risk factors for cardiovascular diseases, untreated overweight and obesity are the key health issues that leads to CVD. With an overly increasing statistic, WHO in 2010 assume that be 43 million overweight children under the age of 5 will be around the world. Although causative factor such as obesity is widely research, there are few studies directing to cardiovascular diseases in paediatrics and impact of nurses in its management. Nurses role in childhood CVD cannot be underestimated, it is important that nurses present themselves as a role model through healthy choices, continuing education and further research on their role in paediatrics CVD and its risk factors.

8.1 Strength, limitations and recommendations

An important strength of this study is the usefulness of the results, it will serve as a guide for nurses or nursing students who intend to have an overview on this topic 'paediatrics cardiovascular disorders' and the possible evidence base approach for nurses in practice. The author was able to systematically derive a good and well organize information from the 24 articles.

This study is carried out through review of most recent and relevant articles to investigate cardiovascular disorders in paediatrics and it covered a wide theme using a review of 24 articles. The author found this study interesting and had an opportunity to understand how

cardiovascular diseases emerge and how it has been widely researched. However, few challenges were encountered as the author proceeded with the actual process. There seem to be a lot of articles about cardiovascular disease in general and a lot of research has been carried out on relative risk factors and there were vast resources on articles relating to the comorbidities of this topic. But only few of these articles focused on cardiovascular disease in children. Also, there might be a possibility of bias in article selection due to restriction of language choice causing a limitation of ignoring some important articles. Reading through the theoretical framework of Nola Pender's health promotion model was interesting because it fit the goal. Though it was difficult to narrow down some key points in the model because it was vast. Also, the author discussed lots of important health issues to be considered when trying to prevent childhood CVD. And the abundant role nurses could assume to support children and their families. Although this study has achieved its aim to answer the research questions posed at the onset of the work. The author of this study will like to emphasize the need for further research relating to this topic.

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APPENDICES

Appendix I: Nola J. Pender's Health Promotion Model makes four assumptions which are specifically focused towards nursing perspectives, it states that:

1. *Individuals seek to actively regulate their own behaviour.*
2. *Individuals, in all their biopsychosocial complexity, interact with the environment, progressively transforming the environment as well as being transformed over time.*
3. *Health professionals, such as nurses, constitute a part of the interpersonal environment, which exerts influence on people through their life span.*
4. *Self-initiated reconfiguration of the person-environment interactive patterns is essential to changing behaviour.* (Pender et al. 2011) (Alligood. & Tomey 2010)

Appendix II: Sub-concepts statements

Individual characteristics and experiences:

Prior related behaviour: This is the occurrence of same or comparable behaviour in the past which has either direct or indirectly effect on the possibility of engaging in health promoting behaviour.

Personal Factors are characterized as biological, psychological and socio-cultural, these factors are an anticipation of given behaviour and embodied by the nature of the considered target behaviour.

□ ***Biological factors*** include unmodifiable background variables such as age, body mass index, aerobic capacity, gender, pubertal status, strength, agility and balance.

□ ***Psychological factors*** include self-esteem and motivation, personal competence, perceived health status and definition of health.

□ ***Personal socio-cultural factors*** comprise of acculturation, education, ethnicity, race and socioeconomic status and the can be modified by nursing intervention.

Behavioural specific cognitions and affect has 6 levels and categorized in two sections in relation to individual characteristics and experiences.

□ ***Perceived Benefits of Action***: is an expected positive outcome that will arise from health behaviour.

□ ***Perceived Barriers to Action***: is an expected, imaginary and personal costs of on taking a given behaviour.

□ ***Perceived Self Efficacy***: is a judgment of personal capability to establish and implement a health-promoting behaviour which influences perceived barriers to action so advanced efficacy result in lowered perceptions of barriers to the performance of the behaviour.

□ ***Activity Related Affect***: is subjective in nature either positive or negative feeling that occur before, during and following behaviour based on the stimulus properties of the behaviour itself. It influences perceived self-efficacy increase thus generating positive effect, meaning the more positive the subjective feeling, the greater the feeling of efficacy.

□ ***Interpersonal Influences***: this is concerned with cognitive behaviours, beliefs or attitude of others, and the expectations of significant others, social support and modelling the learning through observing others engaged behaviour. Families, peers, and healthcare providers are the primary sources of interpersonal influences.

□ ***Situational Influences***: is where personal and cognitive perceptions of any given situation that can hinder behavior, perceptions such as available options, demand characteristics and aesthetic features of the environment where health promoting is expected to take place. Situational influences may have direct or indirect influences on health behaviour.

Behavioural outcome has 3 levels:

• **Commitment to Plan of Action**: is concept of intention and identification of a planned strategy that strategy leads to implementation of health behaviour.

• **Immediate Competing Demands and Preferences**: Competing demands are those alternative behaviours over which individuals have low control due to environmental possibilities such as work or family care responsibilities. Why competing preferences are those

behaviour in which an individual has total control, this includes a having a choice over what to eat.

- Health promoting behaviour is the target act directed towards achieving a positive health outcome like ideal well-being, personal fulfilment, and productive living. (Alligood. & Tomey 2010)

“The model identifies background factors that influence health behaviour. However, the central focus of the model is on eight beliefs that can be assessed by the nurse. These eight beliefs are critical points for nursing intervention. Using the model and working collaboratively with the patient/client, the nurse can assist the client in changing behaviours to achieve a healthy lifestyle”