

The Role of Nurses In Preventing the Complications of Type 2 Diabetes Among Elderly

A Systematic Literature Review

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Abstract

Type 2 diabetes is seen most common among older people. One of the major reasons for this is due to lack of knowledge on self-care and how to prevent the complications caused by type 2 diabetes. The major goal of this study done is to have a profound understanding on the role of nurses in preventing the complications caused due to type 2 diabetes.

To do this study, systematic literature review has been conducted. Ten research articles from three databases have been selected which is (CINAHL, MEDLINE, ACADEMIC SEARCH ELITE). These articles have been analyzed thoroughly to inquire – What is the role of nurse in preventing the complications of type 2 diabetes within elderly? The author chose this topic, as type 2 diabetes is common globally. Hence, making it important for the patients living with type 2 diabetes to be more alert about the complications and the preventive methods.

The results depicted that the complications caused as a consequence of type 2 diabetes within the elderly people could be prevented and controlled from getting worse. The importance of self-care and the role of nurse in helping the elderly clients as well as the preventive methods have been showed. The pharmacological interventions and the non-pharmacological treatments for type 2 diabetes have been outlined. It is necessary that furthermore research on such topics could be done to acquire more knowledge on the improvement methods for the nurses to assist the patients.

Language: English Key words: Type 2 diabetes, Complications, Prevention, Role of Nurses, Systematic Literature Review

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1 Introduction

Type 2 diabetes can expedite into many complications among elderly. One of the predominant complications is heart failure. Heart failure is a diverse medical condition which is 10% more affected to the people who are 75 years old and above. Individuals with type 2 diabetes are at the accelerated risk of getting cardiovascular complications (Ceriello, et al., 2021). Diabetes Mellitus has been elevated worldwide. According to the studies, approximately 463 million cases of diabetes has been diagnosed in the year 2019 among adults. Studies predict that, there will be around 700 million new diabetes cases by the year 2045 in the whole world. Neurovascular complication, diabetic retinopathy, which is another common complication of type 2 diabetes, can induce to blindness in other words can cause loss of vision (Shan, et al., 2022).

According to the World Health Organization (2016), around 400 million people globally are living with diabetes. Diabetes is a long-term and serious condition, known to have accelerated levels of blood glucose in a human body, thus leading to complicated health problems which can affect any individual's life negatively. Elevated blood glucose level can affect the kidneys, eyes, heart. There are two categories of diabetes, Type 1 diabetes, and Type 2 diabetes. Type 1 diabetes in common terms is known as 'Insulin-dependent' diabetes. Type 1 diabetic patients often administer insulin on daily basis, else their survival can become quite challenging. Type 2 diabetes however is known as non-insulin dependent. Type 2 diabetes is increasingly frequent all over the world. Type 2 diabetes is prevalent in adult and elderly people. Type 2 diabetes if is not treated on time and undiagnosed can instigate complications which can affect the health of a diabetic patient. Gestational diabetes is another type of diabetes which stays for a short-term. It often escalates the glucose levels of a pregnant woman and can sometimes cause complications, although, this type of diabetes could be controlled and treated as it often stays for a temporary period. The economic effect of this disease on the health sector has been expensive as the number of cases has been expanding yearly. More than 827 million US dollars have been spent for the preventive methods as well as for the treatment of diabetes every year. The health care expense due to diabetes have been increased thrice over the years of 2003-2013. The death rates have also been escalating due to diabetes. In the year 2012, around 1.5 million people with diabetes have lost their lives (World Health Organization, 2016). The death rate due to the complications of type 2 diabetes have raised around five million according to studies. Type

2 diabetes not only affects an individual physically but also psychologically (Caro-Bautista, et al., 2021).

The author is motivated to choose this subject primarily due to personal reasons, which also gave the author the possibility to understand and to learn more about this topic as per the resources available. Since this is first time the author got an opportunity to do this study, the author found this topic quite feasible, and it shall be a steppingstone for the author to do further research academically in the future for higher studies. This study shall purely reflect the findings from the reliable sources.

2 Aim and Research Questions

This study's aim is to understand the role of nurses in preventing the complications of type 2 diabetes among elderly. This study will focus on the nurse's role on the treatment and preventive methods for the elderly living with type 2 diabetes complications.

Research Questions

Considering the aim of research, a research question has been framed that has to be inquired:

- What is the role of nurse in preventing the complications of type 2 diabetes within elderly?

3 Background

As the motive of this study is to focus on the role of nurses in preventing the complications of type 2 diabetes within the elderly people, it is important to have proper background knowledge on what diabetes is. In this background, the author shall discuss about few aspects of diabetes.

3.1 Diabetes Mellitus

Diabetes in the worldwide is now an epidemic. Around 347 million individuals are getting affected with diabetes and the fatality rate are higher and are approximately 1.5million every

year. Studies have shown that by the year 2030 which is after 10 years of time, the deaths due to diabetes will rise more than 50%. This would be referred as the seventh cause of death in the world with other health problems. (Kimberly, Julie, & Wagner, 2015).

According to Meeto, McGovern & Safadi, diabetes Mellitus is known to be a metabolic condition which is specified by the elevation of the blood glucose level due to the absence of insulin, there are two categories of diabetes which is Type 1 and Type 2 diabetes. Type 1 diabetes is caused mainly by the demolition of pancreatic b-cells by the immune system of the body. Individuals living with type 1 diabetes control their blood sugar levels through the medium of insulin and to avert ketoacidosis. Type 2 diabetes commonly known as insulin resistance diabetes, occur due to the reduced amount of insulin in the body or because of the way the body reacts to the insulin formation by the pancreas. However, individuals living with type 2 diabetes, do not require insulin often, although if the glucose level of the body is not controlled by their lifestyle and diet, then there is possibility that they would have to take insulin as well. Studies have shown that, type 2 diabetes is mainly due to the poor diet and because of the lifestyle one follows. Diabetes type 2 is said to be more common among elderly when compared with Type 1 diabetes, children are also more prone to type 1 diabetes (Meeto, McGovern, & Safadi, 2007). Increased usage of alcohol by the individuals living with type 1 and type 2 diabetes can induce to severe diabetes related complications or in other words, it can worsen the diabetes. (Kimberly, Julie, & Wagner, 2015).

The rise of type 2 diabetes cases globally can cause an escalation in the health care expenses which can be around 2.3 billion US dollars by the year 2030. With the increased instances of diabetes type 2, there is a significant acceleration in the health care expenses as well (Jun Jie Benjamin Seng, 2021).

Around 40% of adult individuals are affected and living with the diabetes type 1, however, eventually after the age of 30, these individuals are identified as living with type 2 diabetes as well. People who are young at age are commonly prone to diabetes because of low body mass index, sudden weight loss, ketoacidosis, and the blood sugar level $>20\text{mmol/l}$. Hence, the symptoms vary from person to person, it could also be due to heredity. Type 1 diabetes, if becomes complex can bring psychological changes in the individuals and thus leads to psychological issues. So, it is important to educate an individual with diabetes about the psychological changes and to support them. In the year 2019, a global pandemic occurred and is known as COVID-19, Corona Virus Disease-19. The death rate while the pandemic happened was around 4.1 million across worldwide. However, most people who were having

complicated death due to covid were the ones with diabetes. According to NHS England, people with diabetes had the higher risk of death and most cases of death have been for the people with diabetes (Kelly, 2021).

Another diabetes is known as gestational diabetes. Gestational diabetes has raised over the years, and it causes more complications such as preeclampsia. Studies show that, women with Gestational diabetes are at an escalated risk of occurrence of type 2 diabetes postpartum (Benhalima, Jegers, Devlieger, Verhaeghe, & Mathieu, 2016).

3.2 Formation of Insulin and Pancreas

The pancreas is a big and extended organ and is located at right next to the small intestine. Pancreas is an endocrine gland which develops hormones such as glucagon and insulin. It is also an exocrine gland which produces trypsin and chymotrypsin which are the digestive enzymes. This is between the spleen and the duodenum, which is at the back side of the stomach. This consists of few groups of cells from which the b-cells are secreting insulin, however, the alpha cells are secreting glucagon (Nair, 2007).

3.3 Administering insulin

Insulin therapy is common among people with diabetes. Escalated level of diabetes which is usually uncontrolled among the elderly could be treated by insulin as it results in healthier and better glycaemic control. Even though there are some positive and beneficial aspects of Insulin therapy, there is also more risks associated with insulin therapy. It is quite important that the elderly patients should know how to safely administer insulin, and moreover insulin therapy could cause more risk of hypoglycaemia. Insulin pen formations are more helpful than the normal insulins with syringes and vials. Insulin pen formation can be helpful for the elderly with visual impairment. Usage of Basal insulin can mimic the body's absorption level of insulin throughout the whole day and this can help in elderly people with diabetes lower the risk of hypoglycaemia. Insulins which are usually long lasting such as Glargine, can affect elderly people with nocturnal hypoglycaemia which can cause fall risk among older people with diabetes (Keber & Feibert, 2018).

3.4 Complications of Type 2 Diabetes Among Elderly

Diabetes could be hard to diagnose in elderly. Older patients can lack the common symptoms of diabetes such as, polyphagia which is increase in quantity of food, polydipsia (elevated

level of thirst), polyuria (prolonged urge of urination) so which is why diabetes is often undiagnosed in elderly patients (Cirone, 1996). Elderly clients with diabetes are often prone to increased level of atherosclerosis and results to long-term macrovascular problems such as stroke, cerebrovascular disease, and coronary artery disease. Along with these complications, microvascular complications such as diabetic neuropathy and nephropathy have been more common among the elderly individuals with diabetes type 2. Microalbuminuria, which means having higher level of albumin in urine is the foremost sign of nephropathy and with this, the level of protein is at the same time elevated in urine which leads to proteinuria (Rosenstock, 2001). Diabetes is a primary and a leading cause of a persistent kidney disease. Studies showed that one of the treatment methods for this is the renal transplantation (Devetzis, et al., 2015).

Elderly individuals living with type 2 diabetes often get affected with neuropathy which damages the nerves of their body. Diabetic neuropathy has an indication such as tingling effect, loss of sensation, burning feeling especially in the feet. The numbness feeling often makes it a more complicated injury and thus leads to infection in that part of the body, gangrene, and amputation. Older clients are prone to another complication because of type 2 diabetes which is known as Gastroparesis, in which the food consumed by the elderly patient slowly stops moving to the small intestine without any hindrance or any kind of block in the small intestine or the stomach, and gastroparesis further leads to hyperglycaemia, which causes high level of inflation in the glucose levels of the elderly client. Diabetic Retinopathy expedite to loss of vision within elderly individuals living with type 2 diabetes. Although older people with diabetes are more exposed and sensitive to loss of vision because of glaucoma, cataract etc (Rosenstock, 2001).

Usage of medication such as Metformin medication which is used to lower the higher level of blood sugar, can also be problematic and cause health issues among elderly patients. The complication caused to the elderly clients with type 2 diabetes due to consumption of metformin medication can be lactic acidosis, and because of this, the elderly is more prone to heart failure, harming their renal function, causing liver disease (Yap WS, 1998).

Apart from Metformin, there is another medication for diabetes type 2 and is known as Sulfonylureas. The intake of this oral medication might lead elderly to be prone to fall risk due to hypoglycaemia. Studies also show that the increased age and type 2 diabetes are the common risk factors for bone fractures in elderly. However, the pharmacological treatment could also lead to fall risks among elderly. The mortality rate among the elderly clients living

with type 2 diabetes are high due to injuries and disability caused due to fall risk. The intake of sulfonylureas can give rise to hypoglycaemia among elderly people and thus, leads to extreme fall risk. Studies show that 226 people out of 500, who consumed the oral medication sulfonylureas have had accidents like hip fractures. It is said that the risk of hip fracture is more, of which 1.7% for the people who were sulfonylureas users, however, 1.2% of people who did not use sulfonylureas, have also had hip fractures. Sulfonylureas is a common treatment medication for hyperglycaemia for elderly, however it can lead to the production of hypoglycaemia, hence, escalating the risk of fall among older people with type 2 diabetes (Rajpathak, Fu, Brodovicz, Engel, & Lupane, 2015). Since metformin medication is associated with the renal impairment among elderly when used more than necessary and sulfonylureas having the high risks of developing hypoglycaemia along with this, Thiazolidinediones is another medication which can lead to complications like peripheral edema among elderly also with an accelerated risk of congestive heart failure and fluid retention issues. Studies showed that use of Sitagliptin medication for the clients living with diabetes type 2 have had less chances of progression of hypoglycaemia (Round, et al., 2014).

Elderly clients who have type 2 diabetes are susceptible to cardiovascular problems like Stroke, Ischemic stroke, and studies have depicted that the number of deaths among diabetic patients are higher due to cardiovascular diseases if compared with the non-diabetic clients. Cardiovascular disease, for a client who live with type 2 diabetes is mainly due to hypertension and hypercholesterolemia and because of constant habit of smoking. Another complication of type 2 diabetes among elderly are non-traumatic lower extremity amputations, where the lower limb or a part of the body is amputated. Patients who are living with diabetes type 2 have escalated chances to have non-traumatic lower extremity amputations than the non-diabetic clients and the after effect of this is disability (Deshpande AD, 2008).

Along with other complexities of diabetes, depression is a familiar complication within elderly people living with diabetes. Depression is known to be the primary factor of diabetes according to studies. Blood glucose levels could control the mood of the patients with diabetes, as it can cause both hyperglycaemia and hypoglycaemia because of the constant emotional changes occurring due to depression. Mortality rate is higher due to diabetes, around 32% people with diabetes have depression according to the studies. Elderly people with diabetes are more vulnerable to depression because of the disability due to incidents related to fall risk and due to losing their loved ones (Bellini, et al., 2019).

The escalated death rate because of diabetic vascular problems is getting worse. However, deaths due to diabetic nephropathy is also higher, it has escalated around 74.8% (Ling, et al., 2020).

3.5 Risk factors of Diabetes Type 2

The etiology of diabetes type 2 is still not clear, the risk factors are found by the researchers. The four risk factors are: Age, Heredity (Family history), ethnicity, obesity. It is found that individuals with more than 64 years of age are more prone to Type 2 diabetes and are 3.5 times more prone to diabetes when compared with the other ages. Obese adults however are at the same time affected with diabetes and are at high risk. Both men and women who are obese are likely to be affected by type 2 diabetes. The heredity plays a major role, hence, if someone from the family has or had diabetes, it is more likely that any individual from the family would be at the risk of having type 2 diabetes. Certain ethnic groups such as Asian Americans, American Indians are at increased exposure of diabetes as well (DeCoster, 2001). Elderly individuals living with risk of type 2 diabetes are usually the most at risk in comparison to the other age groups. It is evident that elderly people with diabetes are at a risk of having Dementia and often become a resident of a care home which also rises the risk of having diabetes. Disability is another risk faced by elderly. Women with diabetes have more probability of disability compared to the woman without diabetes according to the studies and are prone to risk of fractures, hip fractures and risk of fall. Diabetic patients have escalated risks of the occurrence of cognitive impairment, especially the elderly people are more prone to have affected with cognitive impairment, thus, leading to Alzheimer's and vascular dementia (Phillips & Phillips, 2011).

4 Theoretical Framework

While doing scientific research, a theoretical framework plays an essential part in addition as a support for the research. Orem's self-care deficit theory has been applied as the theoretical framework for this research by the author. The Orem's theory of self-care deficit engrosses on how the patient should be taking care of themselves, prior to the care given by the nurse. This theory depicts the importance of self-care and thereafter the escalation in the wellbeing and in the significantly improved life of the patients. The author has chosen this theory in relation with the research topic, as this theory has been proven to be helpful for the

patients with type diabetes. Patients with diabetes should be aware of self-care, thus, the author chose Orem's theory in support to the topic chosen, as every individual should be less dependent and should be more focused on self-care (Alligood, 2018, p. 198).

4.1 Dorothea Orem's Theory

Dorothea Orem's Self-care theory was established by Dorothea Orem between the year 1950's to 2001. (Alligood, 2018)The self-care theory is identified as the grand theory, which is parted into three different categories- the theory of self-care, the theory self-care deficit, and the theory of nursing system (Alligood, 2018, p. 199)

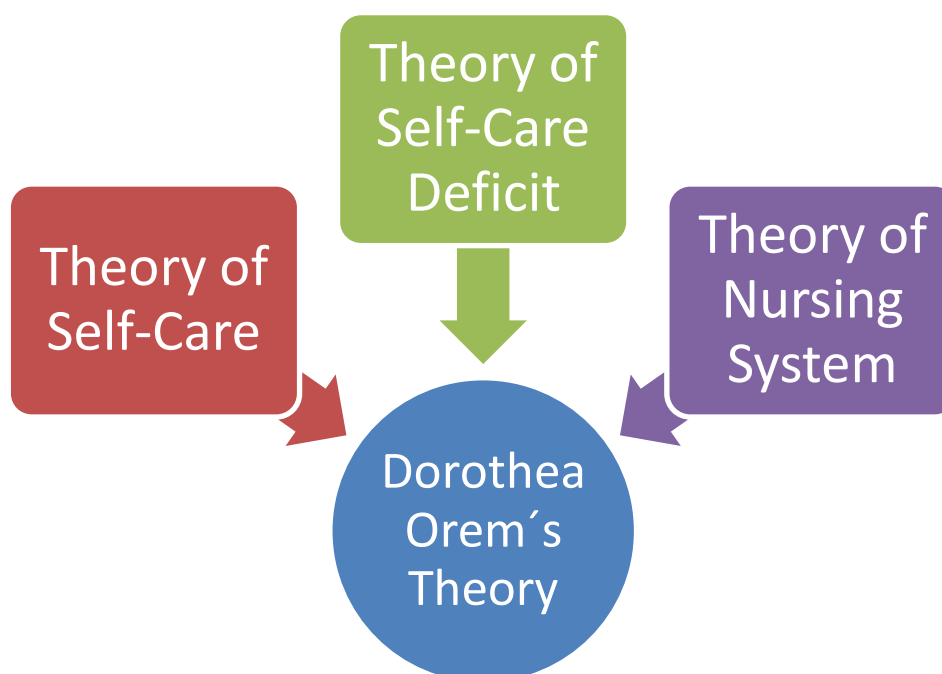


Figure 1: The different categories of self-care deficit by Dorothea E. Orem. (2018, p.198)

4.1.1 The Theory of Self- Care

The theory of self-care indicates the importance of self-care that should be taken care by an individual to keep their lifestyle healthy and to perform self-care activities without physical help, theoretical guidance, or support of a health care professional. This depicts on how the client is been anticipated to take care of their health without the help of a nurse, in other words, being 'independent' (Alligood, 2018, p. 200).

4.1.2 The Theory of Self-Care Deficit

Self-care Deficit Theory of Nursing is known to be the foremost self-care nursing theories which focuses on the solutions of how to be non-dependent when it comes to care. The importance of self-care is reflected in the whole theory, theoretically which guides the patient effectively (Alligood, 2018, p. 199).

The theory of self-care deficit portrays on why the patients are usually dependent on the nurse or the health care workers to take care of them when they feel helpless. This depicts different ways of how an individual can lead a normal healthy life and have a good quality of life. As mentioned by Dorothea Orem, it is said that nurses use different ways of helping methods when it comes to a patient's life. A health care worker can help an individual by educating him or her about a certain health issue, by giving the necessary mental and physical support and showing them the right way to follow by explaining them things that can be done by oneself without dependence (Alligood, 2018, p. 198).

4.1.3 The Theory of Nursing System

Theory of nursing system by Orem depicts the importance of caring and the environment or the kind of relations an individual must keep and develop. This theory mainly points out the role of both nurse and the patient when it comes to care and how the relationship of both nurse and the patient is and how it should be. A nurse builds a bond of trust with the patient, the nurse motivates the patient and gives the care and provides knowledge to take care of himself or herself by their own (Alligood, 2018, p. 198).

5 Methodology

Research methodology refers to a scientific approach of collecting information, arranging, and implementing in an ordered manner with regards to responding to the aim of the research question or to acknowledge the goal of the whole scientific study. The research methodology is a scientific manner of executing academic writing. Research methodology is categorized into two methods which is Qualitative and Quantitative methodology (Moule, Aveyard, & Goodman, 2017).

5.1 Qualitative Research

Qualitative research methodology can be utilized in different aspects of the research for discussing different types of questions. Qualitative research can have a holistic approach which has a goal of having an understanding about the whole process. It usually requires the need of combining different types of data collection plans, triangulation could be taken as an example for this. While doing qualitative research, it is important for the researcher to get completely involved. Qualitative research depends, more on the analysis of the data collection. Qualitative research usually involves different types of data which is collected from different sources by various methods (Polit & Beck, 2017).

In qualitative research, it is important to understand diverse meanings of a research topic. Qualitative research could be also used for finding the results by the philosophical theories noticed during the process of collecting the data. However, an approach taken forward for the research design could portray its usage in the study done. To understand a study, it is important to go through the topic thoroughly, to understand the study from the author's perspective and through the author's experiences. Some studies done in a critical way also has aims, however, the author could have an intense approach or in other words can go in depth on finding the correct answers to the research questions. Most of the qualitative research done usually has an aim of having an empathetic approach towards the studies, in other words, to see different things through the eyes of the target group, their situations such as from their emotional and physical aspects (Merriam, 2002).

The purpose of this thesis is to use a systematic literature review which is conducted using a qualitative research methodology. This method shall be used in this study, as it will assist the author to obtain the answers to the research question and shall help in understanding the factors in regards with the topic of this research and the prospect of further study on the research topic.

5.1.1 Systematic Literature Review

A systematic literature review outlines the findings of the research question on the topic of research. This literature review is a carefully done procedure by collecting the data which is spelled out in advance in a protocol, to have unbiased findings and which can be verified by the reviewers (Polit & Beck, 2017) . Provided, the research given in the scholarly studies includes every detail that has been researched and achieved during the study. A literature review portrays clear review and explanation of the topic (Watson & Xiao, 2017).

A systematic literature review is a vast procedure of developing, following the rules of unbiasedness, gathering the data from different studies to address or to answer the research questions. Systematic literature reviews can portray various sides and different results (Moule, Aveyard, & Goodman, 2017). The conclusions from a systematic review are more relevant and reliable when compared with a single study's finding. It is because a wide amount of literature could be collected from various sources of research done, thus making the data stronger, generalized while diminishing the complete risk of biased findings. According to the Polit and Beck's modified evidence hierarchy depicts that the systematic reviews have taken the place, which is the top of the hierarchy, 'level 1', because strong evidence derives from the systematic reviews, irrespective of what type of research questions are being searched or answered. This assures and answers why the systematic literature review method is been opted for this thesis, as it involves procedures makes sure to maintain the verifiability, objectivity and thus diminishing the chances of biasness (Polit & Beck, 2017).

6 Data Collection

This study will make use of systematic literature review and content analysis shall be done. The reason for why this procedure of data collection will be chosen for this study is provided below.

The data collection methods in qualitative research involves observations, interviews, case studies (Bengtsson , 2016). However, in this thesis the author has obtained the data from scholarly articles, journals, nursing books. The databases which were been used in this review have been from: EBSCO host CINAHL, Med-line, Academic Elite. The databases mentioned have been accessed from FINNA, which is a database search engine which gives unlimited access to the electronic data and library of Novia University of Applied Sciences. The articles and literatures used for this thesis are scientific which is been selected from the database.

The data search has been done in November 2021, the specific search words used for the research questions were: "Role of nurse" AND "Prevention" AND "the complication" AND "type 2 diabetes".

The other search words were: "Diabetes type 2" AND "Intervention" AND "Role of nurse".

“Role of nurses” AND “Prevention” AND “the complication” AND “type 2 diabetes”. After the articles have been thoroughly read, some exclusions and inclusions have been done. The presentation of articles chosen have been done below in table 1.

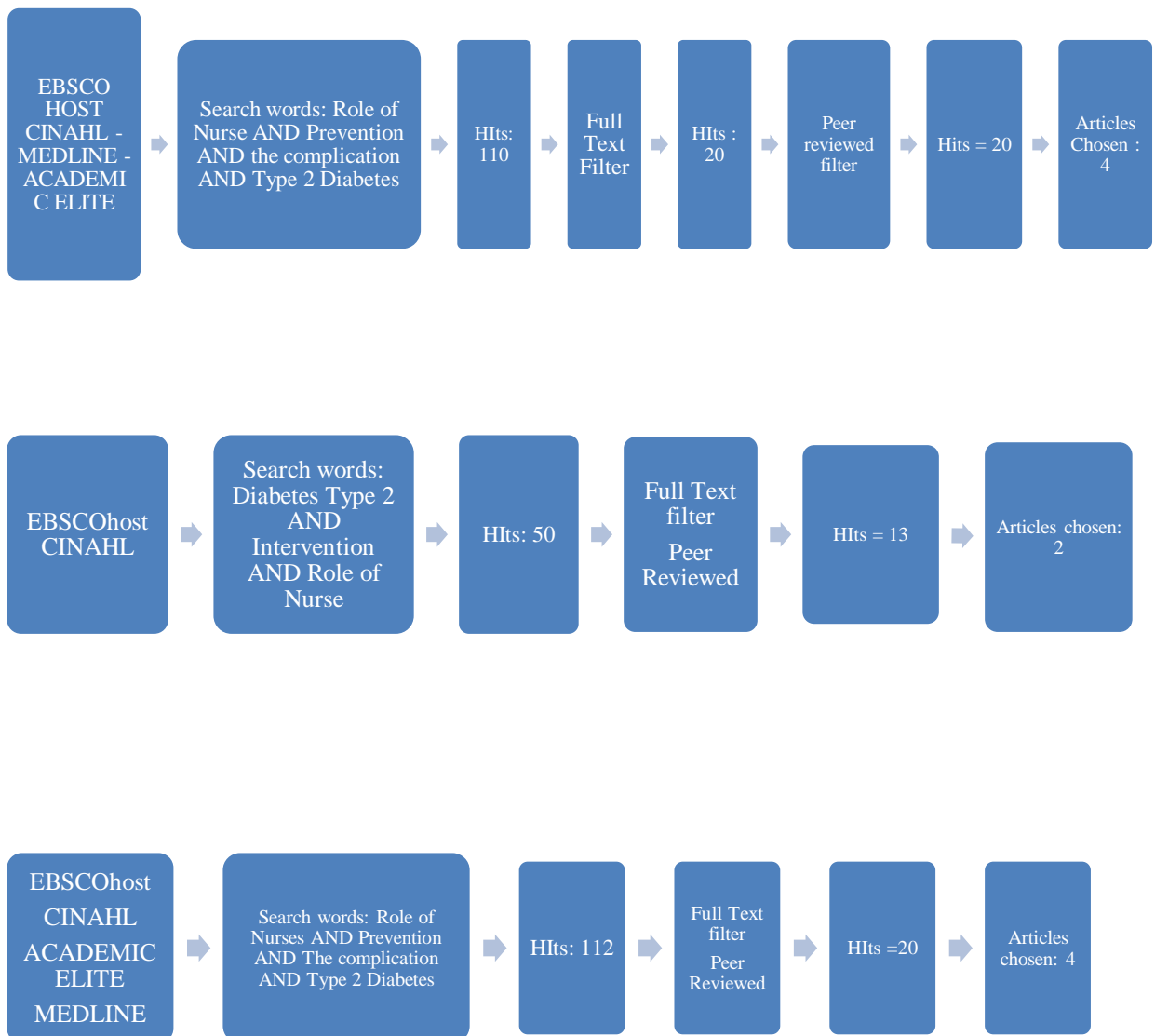


Table 1. Process of the choosing articles.

6.1.1 Inclusion and Exclusion Criteria

Throughout the process of reading and understanding the articles few exclusions and inclusions of the scientific articles have been done and thus shall be explained in this section. The articles chosen had the content in English language and in full text. The articles chosen were peer reviewed. These filters chosen were the inclusion criteria. The above displayed table1, depicts the hits after these filters were put on the database.

In the other criteria, the articles chosen were only related to the research topic have been included. All paid articles were excluded. The articles only focused on the nurses as it was mainly to show the significance of the role of a nurse in an individual's life and the preventive methods of the complications of type 2 diabetes in elderly. The articles chosen were of full text and for free. Ten applicable articles were chosen. The table below shall show how the search process was done. The total amount of hits was 272 after adding all the hits given in table 2. To have a clear picture on how the search process and the inclusion and exclusion criteria was applied, a PRISMA FLOW CHART shall be used as shown in figure 2.

In a summarized manner, the inclusion and exclusion criteria used have been listed below:

1. Articles found were in English language
2. Articles found were in full text
3. Articles found were peer reviewed

Database	Search words	Hits	Articles chosen
EBSCOhost CINAHL ACADEMIC SEARCH ELITE MEDLINE	(Role of nurse) AND (Prevention) AND (the complication) AND (type 2 diabetes)	110	4
EBSCOhost CINHALL	(Diabetes Type 2) AND (Intervention) AND (Role of nurse)	50	2

EBSCOhost	(Role of nurses)	112	4
CINHAL	AND (Prevention)		
ACADEMIC	AND (the		
ELITE	complication) AND		
MEDLINE	(Type 2 diabetes)		
Total		272	10

Table 2: Presentation of the process of search of the articles.

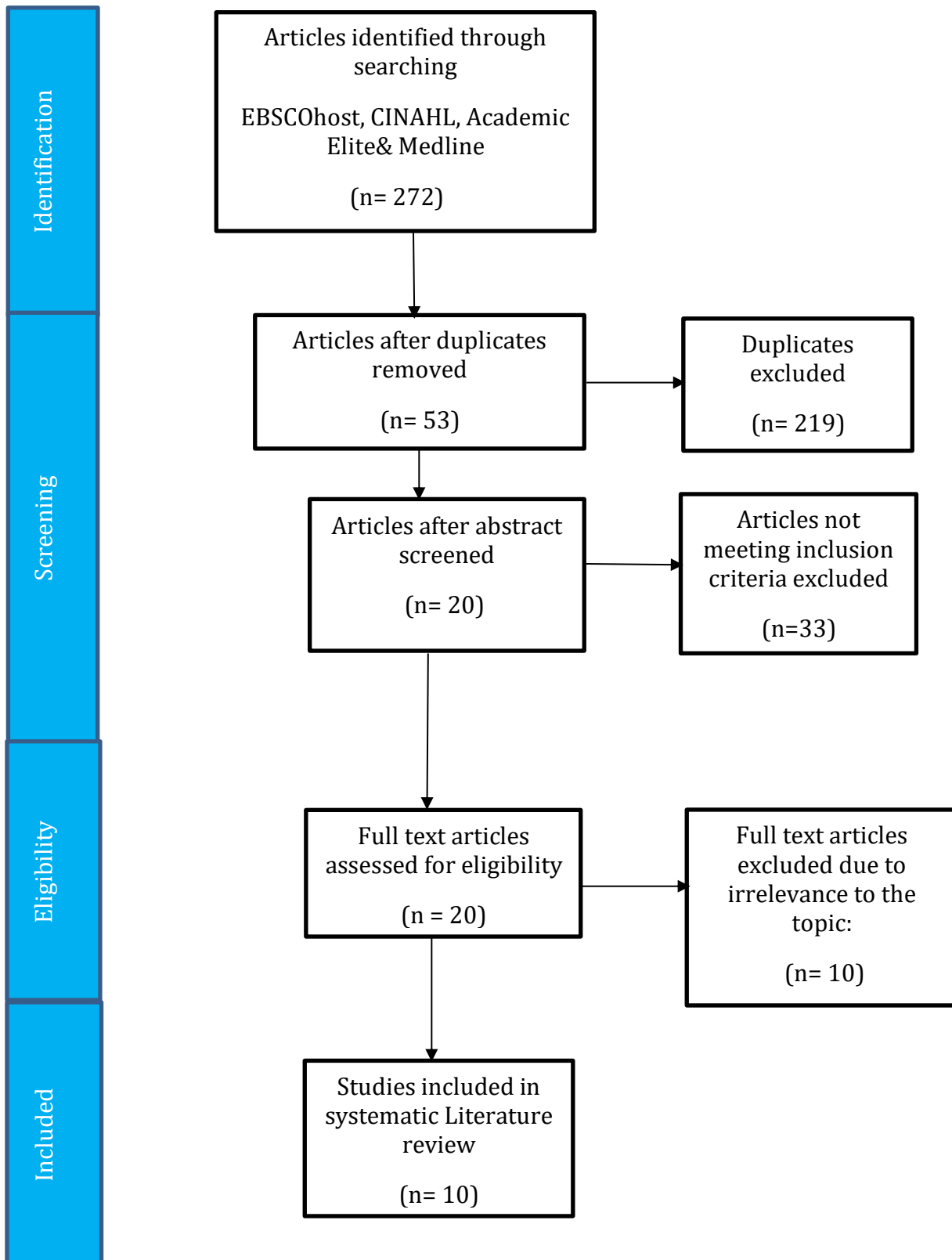


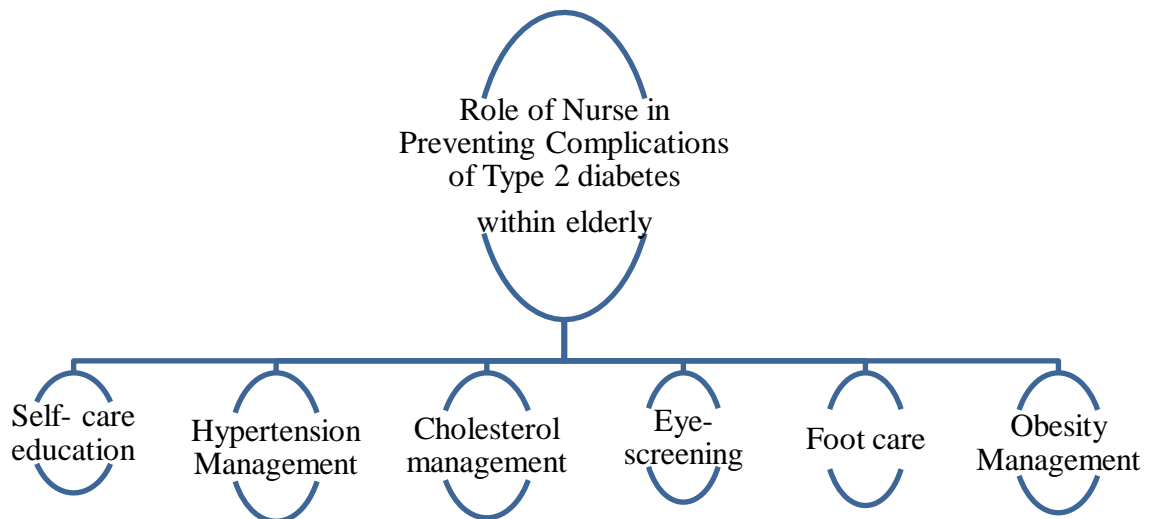
Figure 2: PRISMA flow chart depicting the search process

6.2 Content analysis

The data collected from the articles have been read thoroughly in a systematic manner and the analyzation of the articles selected has been done by the author. This Qualitative systematic literature review is based on inductive content analysis. The selected articles have been summarized to get the code and subcategories from the articles. The code was formed from the articles chosen; however, the subcategories were made to have the findings of the research questions. Based on the analysis made, the findings are being documented, no prior presumptions can be made during the research process. Thus, the selected articles have been read thoroughly throughout to be sure about the whole content of the articles.

Below given is the categorization of code and sub-codes. The code formed after reading the articles chosen is “Role of Nurses in Preventing Complications of Type 2 diabetes within elderly”. The sub-code of this code is “Self-care education”, “Hypertension”, “Cholesterol Management”, “Eye-screening”, “Foot care”, “Obesity Management”.

The categorization of the codes:



7 Ethical Considerations

The literatures used for this systematic literature review are all scientific articles and are verified. The literatures used from different sources will be cited and credited by the author. The ethics will be followed throughout the whole research process. The author has followed

all the instructions and guidelines of ethical research writing given by Novia University of Applied Sciences.

This study would carefully follow all the guidelines stated in the responsible conduct of research by the Finnish Advisory Board on Research Integrity (TENK). The fundamentals of conducting a research- reliability, integrity, validity, accuracy, and meticulous evaluation of the findings shall be practiced in this research. The articles will be completely checked, the findings would be thoroughly evaluated so that the ethics would be followed as well. As stated in the responsible conduct of research the reliability of the study shall be checked thoroughly (Finnish National Board on Research Integrity TENK, 2012). The author shall avoid any kind of plagiarism, only authenticated articles from the scientific databases shall be used. Personal perspective, any kind of fabrication and sources which are vulnerable to plagiarism shall be avoided (Polit & Beck, 2017, p. 154).

The findings of this study would be published in a public platform by giving proper credits and respect to the other researchers. (Finnish National Board on Research Integrity TENK, 2012).

8 Results

The ten articles were chosen to discuss about the findings and has been proved to be beneficial to answer the research question. The author shall describe the findings in a detailed manner in regards with the articles found.

8.1 Role of Nurse in Preventing the Complications of Type 2 Diabetes within Elderly

The public health nurse encourages the patients by taking initiatives to prevent the causes of diabetes in different stages, which includes primary, secondary, and tertiary phase. In the primary prevention, the public health nurse makes sure to spread the knowledge and steps on how to prevent diabetes from developing in the primary stage itself and how to prevent oneself with the risk factors of diabetes and its complications before the occurrence of the secondary phase. However, the secondary prevention methods are to detect and protect the

slow advancement of diabetes. Although, the secondary prevention methods should be taken before the occurrence of the symptoms of diabetes on the patient's health. Diabetes screening and observing the level of glucose on everyday basis could be done as the secondary prevention. The tertiary phase is the third stage of preventing diabetes and which is usually done after the development of diabetes. In this phase, the nurses promote education regarding the steps of controlling diabetes, which is diet, exercises, medication to be taken, foot care. The nurse takes steps to prevent both the critical and persistent complications caused because of both type 1 and type 2 diabetes (Price, 2008).

Diabetes is known to be a condition which is incurable. However, the nurse ensures to give the self-care education on how to take steps on controlling diabetes to initiate normal healthy life. The guidance from a nurse plays an important role, as a nurse is capable to understand and to explain the root cause of diabetes and how to manage diabetes. The nurse assures to give advice on the dietary aspects, in which a nurse should explain about the fat intake and how the diminished consumption of fats and saturated fats is important. Regarding obesity, the step of controlling weight should be advised by the nurse. The advantage of exercising and the minimum time of exercising which is 20 minutes daily and its importance should be specified and discussed by the nurse with the client. However, minimizing and completely avoiding smoking, intake of alcohol should be discussed by the nurse to limit both the macrovascular, microvascular complications. Blood pressure, which can lead to hypertension is also a supreme cause for the clients living with type 1 and type 2 diabetes. However, patients with increased hypertension can suffer from microvascular complications like neuropathy, nephropathy, and retinopathy and to macrovascular complications like stroke, peripheral vascular diseases (Meeto,2004).

Renal disease also known as the last stage of nephropathy or in common words, kidney failure is undoubtedly rising and the patient-education regarding this complication is important as this condition can affect every person in a different way which can destruct the health of the human. A basic education given can be helpful in many ways. Education in relation with diabetes regarding the laboratory observations, medications, the anatomy, and physiology of diabetes which can be the most basic information to know about diabetes briefly which can be proven to be effective. However, the patient with kidney failure should accept the disease that they are affected with and should trust that this can be overcome by the medications and with the proper treatment. Thus, it is always necessary to be careful and to prevent oneself from the occurrence of renal failure. Taking care of diet, following an exercise routine, awareness of family history of diabetes can help one from preventing the

damage to the kidney due to the complicated level of diabetes. Renal replacement therapy could be done if the patient is suffering from kidney failure (Sego, 2007).

The suggested blood pressure level 140/80mmHg is suggested always to avoid hypertension and further complications related with hypertension. Cholesterol on the other hand is attained due to consumption of animal products. Lipoproteins are known to be the matter made of fats and proteins which has cholesterol and is transferred through the bloodstreams. Cholesterol is categorized into two: One is called as Low-density lipoprotein cholesterol also known as bad cholesterol, and the other is referred as High-density lipoprotein cholesterol also called as the good cholesterol. However, the HDL-C removes the lipids from the arteries thereafter when this process does not happen or tend to fail the level of LDL-C occurs and thus the lipid worsens in the arteries, hence leads to atherosclerosis. Therefore, it is important for a patient to control the level of cholesterol by managing the diet and keeping the cholesterol level as $<5\text{mmol/l}$, the LDL-C level $<3\text{mmol/l}$ and the HDL-C level by 1mmol/l . Eye-screening must be encouraged by the nurses to the type 2 diabetic elderly patients who suffers with diabetic retinopathy which is loss of vision. Eye screening tests can be done at the earlier stage itself to prevent vision loss or vision failure. Laser treatments, eye surgery can help in protecting the problems related to eyesight. However, controlling the blood sugar levels and maintaining a healthy value would help the patient to overcome the diabetic retinopathy problem, as high blood sugar level can damage the retina completely. Footcare for the patient with diabetes is important as diabetes increases the chances of pressure ulcer, and this is mostly due damage of the nerves also known as neuropathy or because of the poor blood circulation levels in the body. Since the elderly patients are more prone to foot ulcers the role of nurse is to recommend them about every 3 months check-up of their feet. A monofilament test can be done to know if there is any sensation in the feet of the patient. 10g of monofilament can be used on the upright portion of the feet to feel the sensation, if the patient does not feel any sensation of monofilament, then chances are that the patient clearly has a sign of neuropathy in other words the nerve of the patient is damaged. The nurse should recommend ways of relieving pressure ulcers to the patient (Meetoo,2004).

The management of obesity can be done when an individual begins with dietary, and exercises change (Holt, 2006).Nurses should have a knowledge themselves between type 2 diabetes and overweight, so as to advise the patient on how to have an understanding about one's own body (Whitmore, 2010). It is important that the diabetic patient should try to attain the aim of losing weight and achieve the results. The target should be to lose one-tenth of

the body weight, which can be achieved by documenting the daily weight change, however this would also become a purpose of motivation for the diabetic client. On a weekly basis, the motive should be to lose weight around 0.5-1kg which is possible by constant exercising and by working on maintaining a balanced diet. Therefore, by documenting the changes this can also be beneficial and would be a reason of motivation for both nurse and the patient by seeing the weekly progress of losing weight. The calorie intake should be controlled, which means diminishing the calorie consumption of every week which can be 500-600kcal can result to the targeted weight loss of the patient, hence, this would keep the patient healthy at the same time. To control the glucose level in the blood, Glycaemic Index (GI) diet has been invented for the patients with diabetes in which the clients are advised to consume less of carbohydrate diet which in other words is known as low GI. When carbohydrate intake is less, it has proven to hinder the increase of blood sugar level in a patient's body with diabetes. The patients eats less comparatively than before while the intake of only carbohydrate is less. In other words, the patient should be sure about how much calories are been consumed in a day and should track it daily. Controlling of fat intake is also recommended by nurses at the same time. It is advised that the patient should consume more of monosaturated fats which is the fat from different seeds, nuts. However, consumption of saturated fats and the products with raised saturated fat levels should be avoided, which includes animal-based products, butter (Holt, 2006). An additional approach for weight loss for the type 2 diabetic obese patients who have followed all the non-surgical methods, however, were not beneficial with any of them is, Bariatric surgery. Patients with the Body mass index of around 35-40 can get themselves a bariatric surgery done. Bariatric surgery can give better results in weight loss and controlling the glycaemic level, although it is always important to consult a bariatric specialist before having a bariatric surgery (Whitmore, 2010).

According to Grubbs S & Sica (2007), even after the patients with diabetes have been trying to control their blood pressure levels, still hypertension has been proved to be a rising factor among patients with diabetes by one of the population studies. However, the blood pressure level <130/80mmHg is the target that individuals living with diabetes and with hypertension should be having to avoid the long term microvascular and macrovascular complications. Patients living with type 2 diabetes are prone to have hypertension and further complexities related to it. Regular check-up can be helpful in coping up with this issue.

During every diabetes screening visit to hospital, one can be sure about the routine blood pressure screening at the same time. Clients are being recommended to be seated for at least

5 minutes and to keep the body in a relaxed position in the chair, with their feet down and hands above kept in a comfortable position, the patient should not move while the blood pressure would be checked, because if the client moves a bit, the readings or measures can either be erroneous or invalid. It is important that the patient should be asked to avoid smoking, consuming caffeine, exercising prior to the blood pressure screening, not before 30 minutes of the screening at least. Studies suggests that the blood pressure levels for the clients living with diabetes type 2 can be controlled when the consumption of sodium would be diminished and when the patient would make exercise a daily routine and a part of his or her everyday life. Controlling the body weight by intake of fruits, vegetables would be beneficial for the patient. Avoiding animal fat, and alcohol can also be helpful for the patient to control the rising health issue (Grubbs S & Sica, 2007).

Elderly individuals living with type 2 diabetes have lack of education regarding self-care and thus certain issues and complexities of type 2 diabetes affect their health. The nurses although provide them the education that is required for a healthy living. However, elderly clients with type 2 diabetes are prone to the chronic complication of diabetic neuropathy. Due to lack of self-care education on diabetes, studies have found that the elderly clients are mostly affected by foot ulcers and unaware about how to treat it or how to prevent foot ulcers from occurrence. It is important to check the changes in the shape of the foot always, the sensation of the feet should be assured. The care related to foot plays an important role, and it is important for the nurses to make the clients aware about the proper care that should be given to their foot. It is advised that the clients should keep their feet clean and should keep it protected with the right comfortable footwear. Studies have found that almost 80% of elderly clients are who had injury on their foot had neuropathy. Hence, if the right amount of care would be given to the elderly clients and if they themselves are aware about the preventive methods, this complication can be avoided as well (Bowman, 2008).

Studies suggests that the control of blood fats or in other words blood lipids can be done by using statins which is a medication which can bring down the cardiovascular disease related deaths by 25% within the individuals living with diabetes type 2. Atorvastatin medication 10mg every day, if taken by a client who has type 2 diabetes could reduce the heart related diseases by 36%. Individuals living with diabetes type 2, who are prone to cardiovascular diseases are recommended to get it treated with statins medication (Green, 2005).

The nurse can take initiative of forming a group discussion or a group education with the clients having type 2 diabetes about how to set targets on controlling the blood sugar levels,

this can be time saving in a way, however, individual approach plays a highly helpful role at the same time. When an individual with type 2 diabetes takes certain medication to control the blood sugar levels, and there cannot be seen any control in the level of diabetes, then it is necessary that the medication should be changed. However, the nurse does not have the right to prescribe or change any medication and insulin for a diabetic patient. It is important to have a doctor's consultation for the prescription of medication (Rodgers, 2000).

Another complication due to diabetes and due to the constant usage of insulin therapy is Lipohypertrophy, which is caused because of the accumulation of fatty cells beneath the skin's surface where the insulin is given frequently, thus, making the surface or the injected site swollen due to repeated injections. Lipohypertrophy causes the skin to have fibro collagen scars and making the constantly insulin administered site lumpy, sometimes making it worse and causes the area to be more like up to the size of orange or a golf ball. Earlier, the sites of lipohypertrophy were called as Insulin tumours which is benign. It is said that lipohypertrophy affects more on the arms which could be around 41% and legs around 31%, as well as both places near the umbilicus. The prevention of occurrence of lipohypertrophy is possible by the nurses by educating the patients on how to use the insulin in a manner that it does less harm to the surface of the skin. Changing of the administering insulin site is important as if the insulin would be given at the same place over and over it can surely lead to lipohypertrophy. However, if the nurse educates the patient regarding the tip about changing the site by keeping one finger's size distance from the former insulin administered site, in one way which could prevent an individual with diabetes to have less destruction on the insulin injected sites in the various parts of the body. Avoiding the reuse of the needles is another crucial thing that an individual should follow. Using a new needle for every new insulin injection is the foremost thing as the reuse of needles can distort the health of the patient in many ways. Other way of preventing of the occurrence of lipohypertrophy is to make the client aware about the persistent examination of the insulin injected site. If the patient would check the site every time they administer a new insulin, this could prevent the development of lumps on the skin surface. Recommendation of the checking of injected site by the health professionals every year is said to be important, and this can avoid the complications happening due to the insulin therapy. Patients should be recommended and advised not to inject the sites which are lipohypertrophied, in other words, the sites where already the skin surface is harmed. By avoiding such areas, it could help to lessen the glycaemic control levels and the occurrence of lipohypertrophy. The avoidance of the lipohypertrophied site for a longer period would help the patient in reducing the problem. It

is recommended to avoid the site for a month or if better for one year of time for the recovery of lipohypertrophy. Diabetic lipohypertrophy can be treated in a surgical way if it does not shrink. It can be treated by liposuction. Liposuction treatment can aid in the insulin-administered affected lipohypertrophied area and can give better results (Hambridge, 2007).

9 Discussion

This thesis used the systematic literature review, as this methodology seemed to be more reliable to the author, as the collection of data from different sources as compared to a single source, proved to be more helpful and relevant in deriving the actual results. The result of this thesis is compatible and congruent with the other relevant research articles portrays that the nurses play a central role and are a predominant source of health care, nurses educating elderly about the preventive methods regarding the complications of diabetes type 2 has proven to be helpful for the elderly people as per the studies. As mentioned in the results, the three vital phases which is the primary, secondary and tertiary phases of prevention of diabetes is important as the primary phase is observed more before the development of diabetes when an individual has overweight and methods to prevent from the secondary phase. The last phase is the tertiary phase, where the diabetes is prevented after it is occurred, nurses make efforts to give the guidance related to the preventive methods of diabetes to ensure it does not get complicated for an individual. These phases have been proven to be helpful for the patients who are unaware about diabetes and who have the complicated level of diabetes (Price, 2008). According to Meetoo (2004), Self-care education by nurses is the principal key of prevention for type 2 diabetes. Steps for management of body weight for the patients suffering from obesity is beneficial for the patients living with diabetes type 2. As mentioned in the result, the guidance given by the nurses for exercising daily which is minimum for 20 minutes plays a prominent role in a diabetic client's life, because if one follows the guidance, one can control their escalating body weight. Guidance by nurse if followed regarding reduced amount of smoking, or in other words abstaining smoking and alcohol can help in the reduction of body weight. Perhaps, with these aspects the most important factor that the nurse's advice about is the control of blood pressure, because if the blood pressure is controlled by a type 2 diabetic patient, they can avoid complications like hypertension. Although, if the blood pressure could not be controlled by a diabetic patient, it can lead to further complications such as heart disease, peripheral and vascular diseases which are known to be the diabetic macrovascular complications, however, with this, microvascular complications like nephropathy, neuropathy also have the chances of

occurrence (Meetoo,2004). According to Deshpande, as mentioned in the background, certain disabilities due to diabetes among elderly can be avoided when the blood pressure and hypertension are controlled (Deshpande AD, 2008). According to Meetoo (2004), avoiding foods which leads to cholesterol as per the advice of nurses can help. Fat could be avoided if animal products will be consumed less. Knowing the importance of good cholesterol and bad cholesterol can aid positively in weight loss. By controlling both Blood pressure and the level of cholesterol can somehow control problems from complicating diabetes among elderly (Meetoo,2004). Another treatment therapy according to the studies for the nephropathy is the kidney replacement therapy. The patient being aware of certain complications of diabetes such kidney failure is important, so the nurse ensures always to advice about certain complications and the preventions related to the same for a newly diabetic patient (Sego, 2007).

The treatment or the preventive method for retinopathy which is another complication due to diabetes type 2 can be precluded by timely eye-screening consulted by the nurses if at the earliest stage of diabetes can help the patient in preventing losing their eye vision. Laser treatments can be the other option if the eyesight gets complicated and if there is a need for a surgery. Type 2 diabetic patients are at the higher risk of occurrence of pressure ulcers on their feet, especially the elderly have the chances of having injury on their feet due to lack of movement of their feet, the nurse advice and recommends about the therapy known as foot therapy in every three months. This complication is due to neuropathy, this can be prevented by the monthly check-up, especially the monofilament test done by the nurses can be helpful for the elderly to know if there is any lack of sensation or any damage in their nerves (Meetoo,2004).

According to Holt (2006), managing the complication like Obesity is important. It can be treated by controlling the diet, which is possible if an individual minimizes their amount of carbohydrate consumption, as it makes the diabetic patient to put on weight if consumed in a large quantity. A weekly target of losing weight if kept can help the patient in losing weight according to the studies, it has been helpful for diabetic patients who have been obese earlier. Writing down the change of the body weight due to control of food and due to constant exercise can be motivating for the patient, and the patient would be never disappointed while continuing with the same amount of hard work for losing weight every day. Around one kg of body weight if lost on a weekly basis, can lead to positive benefits in the body weight of a type 2 diabetic obese patient. When the calories are controlled, the blood sugar are controlled at the same time, because due to minimized amount of intake of carbohydrate the

blood sugar levels can be controlled, adding to this, these measures can help in weight loss (Holt, 2006). Patients with higher body mass index can treat their body weight by a Bariatric surgery if other measures do not help them. It is important to consult a bariatric specialist before doing it. These treatment measures can help an obese patient in completely their goal of losing body weight.

Nurses encouraging group discussions with the patients and a personal discussion session with a type 2 diabetic patient can be helpful as per studies done, the elderly patient have had benefits from the personal discussion with the nurse and with the discussions done in a small group regarding the affective methods for prevention of the complications, regarding the medications of diabetes (with the prescription of doctor). Preventive methods for foot ulcers such as advising the elderly patients for maintaining hygiene related to their feet, keeping it clean always, making sure that their feet do not stay wet after a shower, having the right size of footwear can prevent the occurrence of chronic foot ulcers as mentioned in the results above (Rodgers, 2000). Another preventive method for avoiding the development of lipohypertrophy as found through the studies due to repeated insulin therapy among elderly patients with type diabetes is to change the place of the administration of a new insulin every day. Nurses' advice on not repeating the insulin needles can also prevent the elderly patients from more complicated problems according to the studies. The elderly patients have very sensitive skin and when they administer insulin daily, they tend to have lumps under their skin which is usually non-cancerous in other words known as benign. The constant insulin administered site can be avoided, so that the area does not become lipohypertrophied, in this way it can help the elderly from facing complicated health issues. The treatment method for lipohypotrophy is liposuction. This can help the affected area of the skin for the elderly (Hambridge, 2007). Lack of awareness regarding self-care, lack of knowledge about diabetes and its complications give rise to many worse complications, and to prevent these complications from getting worse is quite more important. Awareness regarding the usage of medications is prominent to know. The medication is prescribed by the doctors and not by the nurses but maintaining the dosage of the medication is important. An individual cannot take medication according to their will, one must follow the proper medication routine and diet routine while living with diabetes. As mentioned in the results, studies suggest that statins are helpful in controlling the blood fats, as it also prevents the mortality rate caused due to cardiovascular diseases. Atorvastatin medication has proven to be an aid in reducing the heart diseases.

According to Dorothea Orem's theory of self-care, a patient should learn to be independent and should be viable to take care of themselves without depending on the health care workers. Orem's theory is quite relatable with the topic chosen by the author because the self-care theory apparently depicts the importance of self-care which is the most important factor for individuals living with diabetes. The self-care theory portrays the importance of the nurses educating the patients on how to take care of oneself. The theory of self-care deficit focuses on the nurses by supporting the patients psychologically and physically, which in connection to diabetes type 2 patients is necessary because as per the studies, the clients living with type 2 diabetes are unaware about the care they should give themselves and about how certain things works, be it the basic education regarding diabetes. The theory of nursing system contemplates about the connection between the nurse and the client, how the caregivers should build a trust with a patient so the patient can consider the health care worker trustworthy, which can aid to a better treatment. Social support from the family, from the nurses can aid the client living with diabetes type 2 in controlling the fluctuating glycaemic control and which is why it is vital that the nurse should build a good relationship with the patient so it can help the patient's caretaking process in a positive way which can aid in giving positive result gradually. The Orem's theory is relevant for this topic as the elderly individuals living diabetes type 2 are usually more relied on the health-care workers. They believe and do what is been advised by the nurses. Thus, the role of nurses plays a vital role in preventing the complications of type 2 diabetes within elderly, they can help them in dealing with the physical and psychological issues the elderly with type 2 diabetes goes through, hence, aiding for a wellbeing of their life in many aspects.

9.1 Limitations

More studies on this topic should be conducted to have a wide-ranging knowledge in regards with this topic. The sole limitation of this study is that the quantity of articles in terms of numbers used for this study could be more, although feasibly in this study all the databases have been searched thoroughly to get relevant articles. Another major limitation of this study is, this systematic literature review's study has been gathered, analysed, and evaluated by a single person. According to Polit & Beck, A systematic literature review when conducted, could be conducted by two people or more to have more relevant and reliable factors to avert any type of bias study (Polit & Beck, 2017). However, this systematic literature review study has been conducted in a careful manner to prevent any kind of fabrications, biasness, or any personal opinions, although the aspects and factors of reliability could have been improved

more if the research would have been conducted by two or more people as mentioned in Polit & Beck. In this study, one theory has been used in support of the topic chosen. The theory has been proved to be quite reliable, authentic, and well founded and has been proven to be applied in an evidence-based practice. In this study, the author has used information from many types of various sources for an escalated credibility and validity of the study in order to have relevant results. The study done and the results found are available and can be used for further study to acquire further knowledge and get into the depth of the topic.

10 Conclusion

This study aimed on finding the answers relying on the scientific sources and articles found regarding the topic - the role of nurses in preventing the complications of type 2 Diabetes among elderly. It focused mainly on the measures of preventions of the complications caused by type 2 diabetes amongst elderly individuals. The major findings done through the content analysis on the code 'role of nurse in preventing complications' were, Self-care education, Hypertension management, Cholesterol management, Eye-Screening, Foot-Care and Obesity management. Studies depict that the impact of type 2 diabetes has affected the patients physically and in the psychological aspects as well. The study portrays the importance of patient-centred care and importance of education given by the nurses. The study focusses on all the ways of preventing and management of the complications. The study shows that the patients who have followed the preventive methods have been able to prevent themselves from the worse complications. Hence, it is important that the elderly patients living with diabetes type 2 must follow the advises given by the nurse and must take relevant measures to prevent themselves. The author was able to find the answers for this study and the research question has been answered. However, it is necessary that there should be furthermore studies done on this topic which shall help the elderly to live a healthy life, a positive life, and a better wellbeing. According to the findings, the author feels that nurses do not lack knowledge, nurses are willing to help the type 2 diabetic patients, however, there are some instances where the nurse does not completely have to will to help the diabetic patients. To boost the confidence of the patients with type 2 diabetes regarding self-care, it is important that the nurse should build that relationship with the patient as per the theory of nursing system states.

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Appendices

Appendix 1: Data Collection Table of studies included in Literature Review

	Title, Author, Publication, Year.	Purpose/Aim	Methodology	Results
1.	Public Health Nursing & Diabetes Prevention by Price Evelyn, JOCEPS the journal of Chi, Eta, Phi, Sorority, 2008.	The examine the epidemiology of diabetes and the role of public health nurse in decreasing the growing rate of diabetes.	Qualitative study. A qualitative study was done using a systematic literature review.	The importance of a public health has been portrayed, as a public health nurse can spread education in a community and raise awareness regarding type 2 diabetes and its risk factors. The early detection of diabetes can be helpful for the patient's health by reducing the complications of diabetes.
2.	Clinical skills: empowering people with diabetes to minimize complications by Meetoo Danny, British Journal of Nursing, 2004.	To expand the nurse's knowledge on the importance of diabetic education and to reduce the occurrence of macrovascular and microvascular complications due to diabetes.	Qualitative study. A qualitative study was done using a systematic literature review.	The importance of effective patient-oriented education given by nurses is depicted, and the self-care in order to decrease the microvascular and macrovascular complications due to type 2 diabetes.
3.	Challenges and strategies: weight management in type 2 diabetes by Holt Paula, British	To examine the connection between both type 2 diabetes and obesity and	Qualitative study. A qualitative study was done by using a	A change in complete diet of the individuals with type 2 diabetes and

	Journal of Community Nursing, 2006.	how the health care workers face problems while trying to help individuals with type 2 diabetes to lower their body weight.	systematic literature review method.	exercise can decrease the obesity related issues, in this way the complications can be controlled by the patients who are obese with type 2 diabetes.
4.	Taking the pressure off Type 2 diabetes mellitus: Implementing hypertension guidelines by Grubbs. S. Rebecca & Sica A. Domenic, Progress in Cardiovascular Nursing, 2007.	To study the guidelines of management of hypertension among patients with type 2 diabetes and to investigate how the nurses can help in improvement in regards with the care for the patients.	Qualitative study. A qualitative study was done using the systematic literature review.	By following the guidelines given by the nurses, by controlling the complications of type 2 diabetes such as diabetic nephropathy, neuropathy, one can reduce the complications from getting worse, one can reduce the complication of hypertension by controlling the blood pressure, thus, following the guidelines could help in reducing the complications. Hence, the patients also had better outcomes who followed the guidelines.
5.	Promoting safe exercise and foot care for clients with type 2 diabetes by Ann Marie Bowman, Canadian Nurse, 2008.	To examine how elderly people with type 2 diabetes are affected by neuropathy.	Qualitative study. A sample study was conducted, 427 people responded.	Elderly people with type 2 diabetes responded that most of them did not receive any kind of diabetes related education and about the exercises. However, methods to prevent

				neuropathy has been depicted such as usage of monofilament in order to check if there is any sensation in the feet.
6.	Clinical Pharmacological interventions in type 2 diabetes: the role of nurses by Rodgers Jill, British Journal of Nursing, 2000.	To understand the importance of nurses in giving the required treatment for patients with type 2 diabetes.	Qualitative Study. A qualitative study was done by using a systematic literature review.	The treatment methods of hyperglycaemia have been portrayed and discussed, the medication therapy in order to control hyperglycaemia has been depicted. The treatment of diabetes among elderly with medication has proven to be helpful in decreasing the complications from getting worse.
7.	Pathophysiology of Diabetic Nephropathy by Sego Sherril, Nephrology Nursing Journal, 2007.	To understand the preventive methods for diabetic nephropathy.	Qualitative study. A qualitative study done using a systematic literature review.	Early stage of prevention for accelerated glycaemic level and close monitoring of diabetes can avoid any kind of complications like kidney failure.
8.	Type 2 Diabetes and Obesity in Adults by Whitmore Catherine, British Journal of Nursing, 2010.	To examine the psychological affects which leads to type 2 diabetes due to obesity and overweight and	Qualitative study. A qualitative study done using a systematic literature review.	Weight loss can be challenging for a type 2 diabetic patient, however diet, proper medication and preventive treatments like

		the management of obesity.		bariatric surgery can help an obese patient to put down weight and manage their complication due to obesity.
9.	The Management of Lipohypertrophy in Diabetic Care by Hambridge Kevin, British Journal of Nursing, 2007.	To build awareness of lipohypertrophy and the management of lipohypertrophy.	A qualitative study. A qualitative study done using the systematic literature review.	Lipohypertrophy can be managed by the awareness spread to the elderly patients with diabetes, it can be treated through a surgical process which is known as liposuction.
10.	The Domino effect: obesity, type 2 diabetes and cardiovascular disease by Green Veronica, British Journal of Community Nursing, 2005.	To understand the role of nurses in preventing the cardiovascular complications and to provide a holistic treatment for type 2 diabetes.	Qualitative study. A qualitative study done using the systematic literature review.	The early diagnosis of type 2 diabetes has helped the patients with type 2 diabetes in minimizing the complications of cardiovascular diseases.