



**PREVENTING ELDERLY'S DIABETES
MELLITUS WITH PHYSICAL ACTIVITY:
NURSES' ROLE**

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DEGREE THESIS
BACHELOR IN NURSING

2015

DEGREE THESIS	
Arcada	
Degree Programme:	BACHELOR IN NURSING
Identification number:	17303
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Title:	Preventing Diabetes mellitus with physical activity: Nurses' role
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<p>Abstract:</p> <p>Diabetes is a condition that affects people of different ages and ethnicity. There has been significant increased rate in the elderly and the society at large.</p> <p>The aim of the study is to evaluate the effectiveness of physical activity to prevent diabetes in the elderly, how to promote physical activity in the elderly and the role of the nurse in achieving these aims. The research questions are: 'What nursing intervention can promote physical activity in preventing diabetes in the elderly?' and 'Nurses role in preventing diabetes.' The intervention-based model: Tannahill model was used as a theoretical framework. A total number of 13 articles was used in the literature review of this study and content analysis of the study was done in an inductive manner.</p> <p>The findings indicated indeed there is an evidence of connection between diabetes and physical activity, there are several ways physical activity can be promoted in the elderly thus by assessing their needs, through education, nursing follow ups and counsellors, making either individual or group intervention for them and other methods indicated in this study. These methods have been used with significant results. Nurses' role in primary prevention of diabetes includes using of available charts to educate their clients on their risk of getting diabetes, informing clients of health benefits of prevention and constant follow ups to motivate them. There is more to types of physical activity which is suitable according to gender and their age, therefore more studies should be able done in these interesting areas of study.</p>	
Keywords:	DIABETES, NURSE, PHYSICAL ACTIVITY, PREVENTION ,ELDERLY, INTERVENTION.
Number of pages:	57
Language:	ENGLISH
Date of acceptance:	11TH MAY, 2015

OPINNÄYTE	
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<p>Tiivistelmä:</p> <p>Diabetes on sairaus, joka koskettaa ihmisiä iästä ja etnisestä taustasta riippumatta. Diabetes on yleistynyt erityisesti vanhusten keskuudessa mutta myös laajemmin koko yhteiskunnassa. Tämän työn tarkoituksena oli arvioida fyysisen aktiivisuuden vaikutusta ikääntyneiden ihmisten diabeteksen ehkäisemisessä, tarkastella sitä, miten fyysisen aktiivisuuden tärkeyden puolesta voidaan puhua sekä sitä mikä on sairaanhoitajan rooli näiden tavoitteiden saavuttamisessa.</p> <p>Tutkimuskysymykset ovat 'Mitä hoitotyön väliintulo voi edistää liikuntaa ehkäisemään diabetesta vanhuksilla '? ja' mikä on sairaanhoitajan rooli diabeteksen ehkäisyssä.'</p> <p>Tutkimuksen teoreettisena viitekehyksenä käytettiin Tannahillin mallia. Kirjallisuuskatsauksessa tarkasteltiin 13 artikkelia ja sisällönanalyysi toteutettiin induktiivisesti.</p> <p>Tulokset osoittivat, että liikunnan ja diabeteksen ehkäisemisen välillä on selvä yhteys. Ikääntyneiden fyysistä aktiivisuutta voidaan edistää monella tavalla, esimerkiksi arvioimalla ikääntyneiden tarpeita, tietoisuuden lisäämisen avulla, sairaanhoitajan seurannan ja tapaamisten avulla sekä yksilö- ja ryhmäinterventioiden avulla.</p> <p>Sairaanhoitajan rooli diabeteksen ehkäisyssä on jakaa tietoa potilaille heidän riskistään sairastua diabetekseen, kertoa diabeteksen ehkäisyn terveysvaikutuksista sekä toteuttaa seurantaa, joka motivoi potilasta toimimaan diabetestä ehkäisevästi.</p> <p>On enemmän tyyppistä liikuntaa joka sopii mukaan sukupuolen ja iän siksi tutkimuksia on voitava tehdä näillä kiinnostavilla alueilla.</p>	
Avainsanat:	Diabetes, sairaanhoitaja, liikunta, ennaltaehkäisy, vanhuksset, väliintuloa.
Sivumäärä:	57
Kieli:	ENGLANTI
Hyväksymispäivämäärä:	11th Toukokuu, 2015

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FOREWORD

First and foremost, i express my sincere gratitude to God for helping me throughout this entire educational journey. It has not been easy but i always endured and moved on against all odds because He strengthened me. My words may not be enough but i say THANK YOU.

My second appreciation is to my supervisor Solveig Sundell, for the time, calls and countless advises given to me. You made it a point to meet me up anytime i needed help and for even calling outside school hours to guide me, i appreciate this and more, God bless you.

To my lovely parents and family, you were always there with words of encouragements and helping hands, may you reap the greatest of blessings.

Lovely sisters and friends, I may have been pushy during these few times but thanks for having patience to endure me.

To Diabetes and PreDiabetes patients and their families, be positive and strong, the fight is still on.

Finally to the Sweet Angel of my life Miss Ellen Bawuah, you have been the greatest motivation for me to push on against all odds. Your patience have been rewarded with mum finishing this study, now we have more time to spend with eachother. Thank you very much from the deepest bottom of my heart. This entire study and more is dedicated solely to you.

1 INTRODUCTION

In the world today, the rate of elderly age individual is fast growing compared to other age group due to many factors. In 2013, UN predicted a growth in the elderly by stating in research:

Globally, the number of older persons (aged 60 years or over) is expected to more than double, from 841 million people in 2013 to more than 2 billion in 2050. Older persons are projected to exceed the number of children for the first time in 2047. Presently, about two thirds of the world's older persons live in developing countries. Because the older population in less developed regions is growing faster than in the more developed regions, the projections show that older persons will be increasingly concentrated in the less developed regions of the world. By 2050, nearly 8 in 10 of the world's older population will live in the less developed regions.

In focus with the statement above it also stated that the population in the elderly in developed countries are far declining in contrast with the less developed regions, which makes it a very important point of interest, therefore as health workers we must find out and stop what causes this mortality rate.

In other to promote healthy living among the elderly in these developed states, we must find ways causing growth of diabetes rate among the elderly.

This topic surrounds the idea of how little we can do to prevent Diabetes a global menace in our society. When this is done we can divert the huge sum of money and time used in treatment and prevention of complication (Diabetesliitto, 2013).

Healthy living and wellbeing of the elderly whiles living comfortable in their own surroundings can be achieved by promoting healthy living which includes prevention. By practising this we are sure to have a healthy and long living elderly population. This prevents unnecessary hospitalization or institutionalisation due to ill-health, therefore, they can stay in their individual abode with just visits to a rehabilitation or "hang-out" centres to keep fit and be with other people in the same year group as a form of socialisation and companionship.

2 BACKGROUND INFORMATION

The topic is surrounding what is Diabetes, general factors contributing to Diabetes, how physical activity is related to prevention of diabetes in the aged and most important nurses' intervention.

Diabetes Mellitus simple means a disorder in which blood sugar (glucose) levels are abnormally high because the body does not produce enough insulin. (Beers et al, 2009).

Diabetes Mellitus is due to deficiency or absence of insulin or rarely to impairment of insulin activity (insulin resistance) causing varying degree of disruption of carbohydrate and fat metabolism. (Waugh and Grant, 2006).

In Diabetes Mellitus, the pancreas, an organ lying beneath the stomach, fails to produce adequate quantities of insulin which helps to keep the blood sugar level within normal levels. This may be due to genetic defects that can be passed onto family members, disease of the pancreas, trauma to the pancreatic tissue, etc. and in some children it is thought certain viral infection may cause this defect.

There are many rare forms of Diabetes but there are two main types of Diabetes Mellitus:

Type 1 Diabetes –it was previously called insulin-dependent diabetes mellitus or juvenile-onset diabetes. It develops when the body's immune system destroys pancreatic beta cells, the cells that produce insulin that regulates blood glucose. People with type 1 diabetes must survive by injecting insulin by injection or a pump. This usually occurs in children and young adults, although disease onset can occur at any age. Type 1 diabetes accounts for about 5% of all diagnosed adult diabetes. Risk factors include autoimmune, genetic, or environmental. There is no known way to prevent type I diabetes.

Type 2 Diabetes- it used to be called non-insulin-dependent diabetes mellitus or adult-onset diabetes. This accounts for about 90%-95% of all adults diagnosed cases. It begins as insulin resistance: a disorder in which body cells do not use insulin properly. As the need for insulin rises, the pancreas gradually loses its function. Type 2 diabetes occurs usually at older age, obesity, family history, etc. this occurs in children and adolescents. (Centers for Disease Control and Prevention, 2011)

Pre-Diabetes also means that when blood sugar is higher than normal, but still not yet high enough to be type 2 Diabetes but without intervention, prediabetes is likely to develop into type 2 Diabetes in 10 years or less. Also, if you are diagnosed with prediabetes, the probability of damage of Diabetes- especially to the heart, circulatory system, etc. may have started.

However, there is an opportunity to improve one's health by adopting healthy lifestyle changes such as eating healthily, daily routine exercises and maintenance of healthy weight, etc. sugar level may come back to their normal level (Mayor Clinic, 2014).

My main interest is type 2 Diabetes because almost 50% of people affected by it are older than 60 years (Caring for aging parents, 2014).

2.1 Signs and Symptoms

Signs usually develop more quickly within a short week or month with Type 1 Diabetes while symptoms may be hard to detect or absent with Type 2 Diabetes.

- Urination at frequent rate
- Excessive feeling of thirst
- Increased hunger
- Loss of weight
- Feeling Tired more than often
- Reduced interest or concentration
- A feeling tingling sensation or numbness in the hands or feet
- Blurred vision
- Infections frequently
- Wounds healing slowly
- Vomiting and stomach pain

While development of type 1 diabetes is sudden, the symptoms can often be mild or not shown in type 2 diabetes, making this type of diabetes hard to diagnose (International Diabetes federation, 2014).

2.2 Factors contributing to diabetes mellitus

Below are the main factors contributing to Diabetes mellitus:

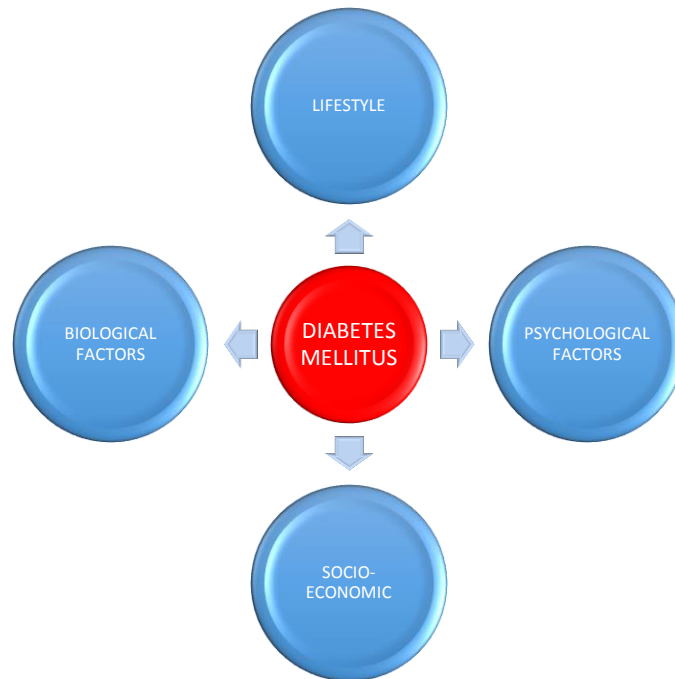


Figure 1.factors contributing to diabetes mellitus

Here are the factors causing diabetes:

LIFESTYLE: Sedentary lifestyle, Obesity, Smoking, Alcohol, Nutrition.

BIOLOGICAL FACTORS: Aging, Hereditary, Sex, Race.

PSYCHOLOGICAL FACTORS: Stress, Depression, Economic state.

SOCIO-ECONOMIC: Lack of knowledge, financial state (American Diabetes Association, 2010).

For this educational purpose our main concern will be fixed on lifestyle factors because they are the main culprits in the high rate of Diabetes mellitus and can be managed with nursing interventions (Kesavadev, 2003). Also in line with the population used in this thesis, the author therefore focuses on type 2 diabetes, because this is prevalent in the elderly (National Diabetes Information Clearinghouse, 2014).

Also, biological and psychological factors can not only cause Diabetes or prediabetes but usually associated with lifestyle and/or psychological factors.

2.3 Facts about diabetes

- 1) The International Diabetes Federation (IDF) reported that as of the year 2013 there were approximately more than 382 million people living with Diabetes. The world health organization (WHO) also estimates that about 90 percent of the world's diabetes population suffer from type 2 Diabetes.

Below are some astonishing facts about Diabetes mellitus:

- High blood sugar as a result of Diabetes led to about 3.4 million deaths in the world by 2004.
- 8 out of every 10 Diabetes-related deaths occur in countries with low and middle income.
- More than half of all Diabetes cases go undiagnosed in people living in developing countries.
- WHO anticipated that deaths in the world caused by Diabetes will double in amount by the year 2030.
- The highest Diabetes rates in the world are from the age 40 to 59, although can shift to adults' from ages 60 to 79 by the year 2030.

- 2) In Finland the numbers are as appalling as the rest of the world, in 2013 the Finnish Diabetes association published that out of 5.4 million of the total Finnish population they are about 50000 people living with type 1 Diabetes and approximately 250000 people with type 2 Diabetes. Undiagnosed cases of type 2 Diabetes is around 200 000.

It further published reimbursement of drug expenses for Diabetes medicines by the social insurance institution of Finland (KELA) at the end of the year 2013, out of which the year group 65-99 years were leading with a total of 156 022 (Finland Diabetes Association, 2014).

Table 1. Reimbursement of drug expenses for Diabetes Medicines by KELA (Finland Diabetes Association, 2014).

Age group	Total	Male	Female
Total	286 136	155 337	130 799
0–14 years	3 784	2 041	1 743
15–64 years	126 330	75 547	50 738
65–99 years	156 022	77 749	78 273

3) Below are facts about Diabetes in the USA:

- American Population with Diabetes Prevalence: In 2012, 29.1 million Americans, or 9.3% of the population, had Diabetes.
- In 2010 the figures were 25.8 million and 8.3%.
- Undiagnosed includes 29.1 million, 21.0 million were diagnosed, and 8.1 million were undiagnosed.
- In 2010 the figures were 18.8 million and 7.0 million.
- Prevalence in the elderly: The percentage of Americans age 65 and older remains high, at 25.9%, or 11.8 million seniors (diagnosed and undiagnosed).
- New Cases: The incidence of Diabetes in 2012 was 1.7 million new diagnoses per year; in 2010 it was 1.9 million.
- Prediabetes: In 2012, 86 million Americans age 20 and older had prediabetes; this is up from 79 million in 2010.
- Deaths: Diabetes remains the 7th leading cause of death in the United States in 2010, with 69,071 death certificates listing it as the underlying cause of death, and a total of 234,051 death certificates listing Diabetes as an underlying or contributing cause of death (America Diabetes Association, 2014).

2.4 Risk factors for type 2 diabetes

Type 2 Diabetes are more likely to occur to people who have the following characteristics:

- physically inactive person or living a sedentary lifestyle
- parent or other family members with Diabetes (genetic)
- A person at the age of 45 or older
- Being overweight or an obese person
- Family background that is African American, Alaska Native, etc.

- delivering history of a baby weighing 9 pounds or more
- history of gestational Diabetes thus diabetes during pregnancy
- high blood pressure which is 140/90 or above/ or being treated for high blood pressure
- previous history of Cardiovascular disease (CVD)
- previous diagnoses with polycystic ovary syndrome, also called PCOS
- Being prediabetic, etc.

The American Diabetes Association (ADA) however recommends prediabetes test and type 2 Diabetes be considered in overweight or obese adults and evidence of one or more risk factors for Diabetes. In adults without risk factors, testing must begin by the age 45 (National Diabetes Information Clearinghouse, 2014).

2.5 Diabetes and Prediabetes in the elderly

All previous ascertain that there is increased prevalence of Diabetes mellitus among the elderly. In the later years of one's life especially after retirement, they are succumb to sedentary lifestyle especially being confined to the four corners of a retirement home. These factors coupled with nutrition, lack of knowledge, smoking, alcohol, etc. makes them more prevalent to have Diabetes in the later years of one's life

A study in 2003 stated that “the most important demographic change to Diabetes prevalence across the world appears to be the increase in the proportion of people >65 years of age” (Wild et al, 2013).

2.5.1 Signs and Symptoms in the elderly

Elder patients often present with different signs and symptoms of diabetes, so it's important for nurses and close relatives to know what these are so they can help this patient population.

Because of these age-related physiological changes, elder patients may not present with classic symptoms of hyperglycaemia (excessive blood sugar). Common presenting symptoms includes:

Dehydration, dry eyes, dry mouth, confusion, incontinence and frequent urination may be absent (Jill Weisenberger, 2013).

2.6 Role of a nurse in prevention

Nurses have diverse roles and responsibilities, including; first aider, caregiver, decision maker, care manager, team player, advocate for patients, teacher.

Unlike what most people think nurses are not doctors' assistance. The role of a nurse are diverse narrowing to helping a patient as defined here: "*The unique function of the nurse is to assist the individual, sick or well, in the performance of those activities contributing to health or its recovery (or to peaceful death) that he would perform unaided if he had the necessary strength, will or knowledge*" Virginia Henderson, 1978, (Swanson, K. M. 1993).

The role of a nurses has evolved throughout the years, in relation to the needs of the patient. By holistic care approach all needs of the patient are taken care of by the nurse to promote healthy living. (Education-portal, 2015).

Many people may have the notion that nurses cannot help in early detection or primarily prevention of diabetes. In contrast with the above nurses have the greatest role in preventing diabetes by administering the role of an advocate and teacher. The prevention role of a nurse is divided into three groups namely:

2.6.1 Primary prevention

Primary prevention initiates work in preventing risk factors for example: sedentary lifestyle, physical inactivity, etc. for diseases in this case diabetes. This is usually done through patient education and in primary prevention, nurses helps in early identification of individuals' risk factors and help them to reduce these factors to prevent onset of a disease.

A unique test by Professor Jaakko Tuomilehto from the department of Public Health, University of Helsinki, and Jaana Lindström, MFS at the National Public

Health Institute emphasized that humans cannot change our genetic predisposition or age.

Meanwhile, other factors such as sedentary lifestyle, overweight, etc. are our own life decision to deal with. As nurses we must approach patients in a non-bias way but mindful of their individual needs, as all people are different.

We can also encourage by giving out incentives but not necessarily in the form of gifts but knowledge about its benefits and consequences are enough boost for lifestyle changes.

2.6.2 Secondary prevention

Secondary prevention deals with early identification and detection of diseases in its earliest stages, when it is most likely to be treated successfully. It is also used to prevent the spread of communicable disease. The role of the nurse here is very important, as they can recommend or schedule screenings and also encourage and educate patients in barrier nursing.

2.6.3 Tertiary prevention

It involves the actual treatment for the disease. It's designed to restore self-sufficiency and focuses on limiting complications and disabilities associated with the disease.

2.7 Role of nurse in preventing Diabetes

With the above giving detailed information about prevention, we will like to narrow down to primary prevention, which is the main aim of this project.

Nurses are in most contact with the patient regarding the whole health team. We do have the opportunity to access patients for risk factors by accessing them. With this in mind, the use of diabetes risk assessment form developed by Professor Jaakko

Tuomilehto and Jaana Lindström (appendix) from Finland can serve as a guideline for the nurse to advise and counsel patient on their role in preventing diabetes because early stages of type 2 diabetes seldom manifest. If a person scored 12- 14 on the risk assessment form, the person should seriously consider lifestyle modification such as physical activity to prevent one from developing diabetes (Lindström, J., & Tuomilehto, J. 2003).

If a score of 15 points or more is gained, a further check of blood glucose level must be assessed.

Clinical trials have also demonstrated lifestyle changes can prevent type 2 diabetes, studies have shown increased physical activity can reduce the incidence of type 2 diabetes in high risk individuals.

No matter a person's risk, a nurse can guide the individual towards suitable physical activity to prevent diabetes (Laaksonen, D. E et al, 2005).

2.8 Physical inactivity and Diabetes

Living a sedentary lifestyle without enough physical activity is damaging to ones' health. It leads to overweight and further to pre-Diabetes and type 2 Diabetes. By staying active helps the body's insulin to be effective.

In fact, the World Health Organization says a sedentary lifestyle is one of the 10 leading causes of death and disability. It accounts for 300,000 premature deaths each year in the United States alone. These deaths are mainly from cardiovascular disease -- something for which people with Diabetes and prediabetes are at a much higher risk than others. Research has shown that even one session of physical activity can help improve a person's ability to use insulin. However, the effect lasts only 12 to 48 hours, which means regular physical activity is needed to keep insulin working effectively (Jennifer Hicks, 2008).

World Health Organization stated that sedentary lifestyle can have great implications on health during World Health Day. About 2 million in total deaths per year are associated

with physical inactivity, it further prompted that a sedentary lifestyle could soon be among the 10 leading causes of death and disability in the world. World Health Day is celebrated every year on April 7 and serves as a platform to inform the world about public health issues. Physical activity was chosen as the theme for World Health Day, it promoted healthy, active and tobacco-free lifestyle. The whole aim and motivation was to prevent diseases and disabilities caused by living unhealthily and sedentary lifestyle.

Sedentary lifestyles increases or causes of mortality, it also increases cardiovascular diseases, Diabetes, and obesity, etc. World Health Organisation stated that about 60 to 85% of the world's population from both developed and developing countries lead sedentary lifestyles yet it is it less addressed issue. Nearly two out of three of children in the world are also not sufficiently active, with grave results for future health. (WHO, 2002).

Many researches have described the impact physical activity has on diabetes as well as other benefits. Although, prevention of diabetes non-pharmacologically can be achieved through modification of lifestyle such as losing weight, physical activity, diet changes, etc. but no matter the health regime assigned by health workers, physical activity must always be included in order to achieve the aim of prevention (Sanz.C et al, 2010).

In that same year, a research concluded that the combined effect of physical activity, dietary change and normal body has greater effect in the prevention of diabetes, the author therefore encouraged official bodies to help decrease the high rate of diabetes (Lindström, 2010).

Changing of one's lifestyle by practicing physical activity even in later in life has great potential in preventing diabetes and metabolic syndrome (Wannamethee et al, 2006). The increase prevalence of diabetes in aged male over the years has also being a direct cause of physical inactivity and obesity (LeRoith, 2005).

The best treatment regimen available now is physical activity. It is also more beneficial to the aged and conditions associated with aging such as diabetes (Briazgounov, 1987).

There are conflicting view about preventing diabetes with lifestyle modification, citing it has less effect although significant (Cardona-Morrell et al, 2010).

A study by Aoyagi, y and R. Shephard (2011), concluded that promotion of physical activity is not only lifesaving but also saves cost and therefore recommended it as great investment for all stakeholders; health workers, clients and government. This economic benefit is one of the many benefits physical activity has for participants (Gillett. M et al, 2012)

There should be drawn a suitable public health program on physical activity for the elderly in preventing all chronic diseases such as diabetes (Schuit, A.J, 2006). These articles and more researches have concluded that physical activity has direct beneficial effect on the prevention of diabetes in the elderly.

3 THEORETICAL FRAMEWORK

Theory is a set of interrelated concepts, definitions, and propositions that present a systematic view of phenomena by specifying relations among variables, with the purpose of explaining and predicting the phenomena (Kerlinger, 1973).

Theory is defined as “a supposition or a system of ideas intended to explain something, especially one based on general principles independent of the thing to be explained” (Oxford dictionary, 2014).

Theoretical framework is also defined as a collection of interrelated concepts, like a theory but not necessarily so well worked-out. A theoretical framework guides your research, determining what things you will measure, and what statistical relationships you will look for (Stephen P. Borgatti, 1999).

Theories provide structures for the interpretation of individuals’ character, situations and events.

3.1 An Intervention-based model: Tannahill model (1980)

This health promotion model was created by Andrew Tannahill in the 1980s to describe the overlapping relationship between health education, health protection and disease prevention. He described each team separately and the relationship between them.

Health education: According to him this is designed to change people's beliefs, behavior and knowledge in such a way that it promotes health.

Disease prevention: This helps to decrease the risk factors and lower the occurrence and results of various diseases. It includes the three types of prevention namely primary, secondary and tertiary prevention.

Health protection: this focuses on the legal controls and policies of practice which aims at preventing diseases or ill health and enhancing the well-being of the population. In 2009, he added this includes public policies that addresses fair access and chance to healthcare, education, etc. he developed a venn diagram that illustrates this relationship.



Figure 2. Venn diagram on intervention based model

This model has received a lot of criticism for being clearly within the reductionistic, it is said to pay insufficient attention to community-based factors. In 2009, Tannahill, in response to his critiques proposed a new definition for health promotion. It is the "sustainable fostering of positive health and preventive of ill- health through policies, strategies, and activities in the overlapping action areas of:

1. Social, economic, physical, environmental, and cultural factors
2. Equity and diversity
3. Education and learning
4. Services, amenities, and products

5. Community-led and community based activity"

He went further to extend his venn diagram into seven different domains which can be used to describe a wide range of health promotion measures and this gives a suitable basis for classification in policy analysis. This new diagram allows more clarification of the inter-relationships between well-being, empowerment and the preventive of ill health (Downie, Fyfe and Tannahill, 1991).



Figure 3. Tannahills model of health promotion (Downie, Fyfe and Tannahill, 1991).

The following shows how each domain is explained by the authors:

- Domain 1 Preventive this includes all factors to cease diseases from occurring, for example, physical activity for diabetes prevention, nicotine gum for smoking cessation, self-help groups, screening, etc.
- Domain 2 Preventive health education this is the type of education aimed at encouraging people to change their behaviour in order to avoid or delay onset of a condition and illness and also education for health care workers to encourage their clients to use preventive services for example, accessible health care screening at centers, etc.

- Domain 3 Preventive health protection the actual work done to protect people from illnesses, for example, water fluoridation.
- Domain 4 Protective health education for preventive purposes. Putting policies in place to enhance health. For example lobbying for seatbelt legislation, etc.
- Domain 5 Health education for well beings gains. This is education to encourage changes in an individual's health behaviour to promote their health gains for example promoting a more physically active use of leisure time, etc.
- Domain 6 Health protection for wellbeing gains. For example Lovisa's construction of rehabilitation or leisure facility to enhance the health of the aged.
- Domain 7 Protective health education for wellbeing gains. For example encouraging decision makers to build health facilities for the health of the society.

This is to use health education to teach and improve social, economic, and personal knowledge that affects health, and to request for environmental changes from policy makers.

This theory has received a lot of critics that it doesn't wholly cover community, their effort to improve health and for not taken into account social and economic factors that may affect decision making.

However, it is good for health promotion applications, improves knowledge and influences positive healthy behaviors. It is also practical in both teaching and training.

4 AIMS & RESEARCH QUESTION

BROAD OBJECTIVES

Lifestyle factors that trigger diabetes among the elderly.

SPECIFIC OBJECTIVES

- To define relationship between physical activity and Diabetes among the elderly.

- To find nursing interventions to promote physical activity in the elderly.
- To assess what nurses can do to prevent diabetes in the elderly.

RESEARCH QUESTION

1. What nursing intervention can promote physical activity in preventing diabetes in the elderly?
2. What are Nurses role in preventing diabetes?

MOTIVATION TO CHOOSE A RESEARCH TOPIC

From my previous studies and work experience, I noticed that there was always newly diagnosed cases of Diabetes. The treatment course that there had to go through, cost of treatment and especially the complication was abhorring.

As people begin aging, they begin to leave a sedentary lifestyle. Physical inactivity has a connection with diabetes. Therefore, in order to prevent diabetes mellitus we must introduce exercise in the old aged to prevent conditions such as Diabetes.

Lovisa's project to promote healthy living among the elderly, also involves prevention of diabetes mellitus, a deadly condition known among the aged,

This I know would promote long-lasting healthy living among the elderly by educating them and the general public about the 6th leading cause of death among the elderly (Kesavadez et al, 2003) and also 7th in countries like USA (National vital statistics report, 2011).

5 METHODOLOGY

This research is a qualitative research study. This is primarily exploratory research. It is used to gain an understanding of underlying reasons, opinions, and motivations. It provides insights into the problem or helps to develop ideas or hypotheses for potential quantitative research. Qualitative Research is also used to uncover trends in thought and opinions, and dive deeper into the problem (Wyse E. Susan, 2011).

Literature based methodology can also be defined as the design of a research work where literature is the population and author adopts sampling, data collection, data analysis and ethical consideration in the study (Dr.H. Comerasamy, 2012).

Research methodology consist of “*systematic, explicit, and reproducible method for identifying, evaluating, and synthesizing the existing body of completed and recorded work produced by researchers, scholars and professionals*” (Fink, 2005).

5.1 Literature review

The author utilises systematic literature review with inductive content analysis as a method in analysing data in this research. Another name is systematic overview.

It can be defined as [“A scientific tool which can be used to summarise, appraise and communicate the results and implications of otherwise unmanageable quantities of research”] (Green, 20005).

Its main purpose is to synthesise results of other studies, it follows the following process

- Assessing the research problem
- Finding of research question(s)
- Review of study through searching of data, critical content analysis and combination of data.

This basically reanalyse results and findings (Dr.H. Comerasamy, 2012).

A literature review provides the context for your research, through investigating and usage of the other people’s work, and this gives the author position within his/her field of study.

A literature review should address:

- What previous researches are done in this field or topic?
- What final results and conclusions emerged from this research?
- How findings from previous studies helps with the study of my topic?
- What will justify the research and make sure the researcher avoid plagiarism (Taylor et al, 2014).

Literature review was defined by Aveyard (2007: 5) as a comprehensive study and interpretation of literature that relate to a particular topic.

It also helps to review, analyse and summarise the body of existing literature of specific topic that is easily accessible and can be understood by those who want to consistent on the topic but lacks adequate time to read and analyse all information needed (Aveyard, 2007).

The author uses a content analysis approach in this qualitative research.

5.2 Data collection

The analysis of these articles was being guided by standard criteria to avoid diversion of the study from its main aim.

As this study is a literature review and is based on earlier studies, therefore search terms such as diabetes, nurse, physical activity, elderly, intervention and prevention were drawn. The author noticed that studies that uses the synonym “old age” instead of “elderly” were not highlighted, therefore both terms were alternatively used throughout the process.

Exclusion criteria was set up to do away with irrelevant articles, so that more priority is given to the needed articles in this study.

Inclusion criteria targeted relevant and recent articles about nursing intervention to promote physical activity in the elderly, and must be academic journal with experts in the medical field pertaining to humans.

Through the Nelli-Portal database from Arcada University of Applied science, academic databases such as Academic search elite (EBSCO), PubMed, ScienceDirect and Google Scholar were used due to their reliability. Although, the search resulted in numerous articles the exclusion criteria were followed to reduce their number to get the relevant ones.

All the databases have individual ways of utilising. In EBSCO and PubMed, there are individual spaces to write each search word with an additional sign (+) to add more

empty box. While in ScienceDirect it is just one or two empty boxes so the author utilised the conjunctions AND meaning (+) and OR or the comma sign (,) to represent synonym.

The abstracts were carefully read through and articles whose conclusions were deviated from the author's questions were immediately cancelled out.

Since they all had individual complicated search engines I would illustrate below:

EBSCO (academic elite): It was carried out in advanced search, it had a search box for each search word, with which you can add more search boxes.

The search mode was Boolean and full text, year range (2000-2015), scholarly reviewed were the inclusion criteria used to yield results.

PubMed: Although, it has the same format as EBSCO in relations to the search boxes, the year range was in 10 years as opposed to specific years written.

It has species column in which humans were selected. Free full text, abstract and peer reviewed were the inclusion criteria used to arrive at the final selected articles.

ScienceDirect: In this search engine, there are two provided search boxes. Since the author search words were more than two, she utilises "and" meaning additional separate words and "or" meaning synonym to the adjacent word.

GOOGLE SCHOLAR: This is quite different from the above; the search engine was the input of specific question relating to what the author was searching. It has inclusion and exclusion criteria such as abstract, date and relevance.

5.2.1 Inclusion and exclusion criteria

Prior to searching the article, inclusion and exclusion criteria were drawn to enable the author find the best article to answer the research question.

The year range from 2000-2015 was set to enable the author get current articles.

All the articles were drawn from academic search engines namely EBSCO, PubMed, ScienceDirect and Google Scholar. This was to get academically peer reviewed articles.

The articles were all written in English for easy clarification and understanding. They were all free articles with links to their full texts since the author had no resources to fund the purchase. All the articles were read true and understood well before being used for the literature review.

Table 2.Data collection process

DATA BASE	SEARCH WORDS OR SENTENCES	RE-SULT S	EXCLUSION AND INCLU-SION CRITERIA	RELEVANT ARTICLE	FINAL ARTI-CLE USED
EBSCO	Nurse, physical activity, elderly,	74	Full text, 2000-2015, scholarly peer reviewed	41	5
PubMed	Nurse, physical activity, elderly, prevention	797	Abstract- 128 Full text- 171 10 years- 143 Human- 129 Review-10	10	1
Science Direct	Nurse, intervention and physical activity, elderly (2000-2015)	14792	Filter topic by: patient, physical activity, risk factor, primary care Date- 2016,2015,2014 Journal-	1251 180 5 out of 99	2

Google Scholar	“nursing intervention to promote physical activity in the elderly”	132000	Sort by relevance- Sort by date- 2014- 2015 (With the exact phrase “physical activity”) and abstract.	40300 18	5
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Table 3. Articles used for literature review

NO.	AUTHORS & YEAR	TITLE	SEARCH ENGINE	CONCLUSION
1.	Wallace. R et al. (2014).	Effects of a 12- week community exercise programme on older people.	EBSCO	Nurses can promote exercise through focus groups and time specific (12 weeks) to improve the quality of life in older adults.
2.	Resnick. B et al. (2011).	Testing the effect of Function- Focused care in assisted living.	EBSCO	Function- focused approach is very useful in preventing decline in physical activity common to older people in assisted living.

3.	Neidrick T. J et al (2012).	Physical activity promotion in primary care targeting the older adult.	EBSCO	<p>Individualised/ Tailored activity should be prescribed after a holistic assessment is done.</p> <p>Activity counselling is further needed to identify the most efficient intervention.</p>
4.	Waryasz. G. R., & McDermott A. Y (2010).	Exercise prescription and the patient with type 2 diabetes: A clinical approach to optimizing patient outcomes.	EBSCO	<p>They suggest patient centered preference exercise thus tailored to the ability of the patient and safety issues regarding the specific condition of the patient.</p> <p>Health workers should also check periodic progression to secure continuation</p>
5.	Yeom H. A., Keller C., & Fleury J. (2009).	Interventions for promoting mobility in community-dwelling older adults.	EBSCO	Group-based intervention with specific structured exercise depending on gender and ethnicity.

				<p>Minimum participation time should be at least 12 weeks for effectiveness.</p> <p>They should be a followed up interview by health worker or monitoring tools like diary or log.</p>
6.	Huang, N. (2005).	Motivating patients to move.	PubMed	<p>The use of the 5 As' approach and other factors such as interview, practice approach and the establishment of linkages with communal agencies will promote physical activity in the elderly.</p>
7.	Gagliardi A. R et al. (2014).	Factors contributing to the effectiveness of physical activity counselling in primary care: A realist systematic review.	ScienceDirect	<p>Physical activity counselling should be promoted to enhance physical activity.</p> <p>They should be training and tools for primary health care provider to</p>

				promote counseling.
8.	Pardo Alba, et al (2014).	Effectiveness of a supervised physical activity programme on physical activity adherence in patients with cardiovascular risk factors.	ScienceDirect	Physical activity referral schemes (PARS) has been listed to improve physical activity and also retain for up to a year.
9.	Harris Tess, et al. (2015).	A Primary Care Nurse-Delivered Walking Intervention in Older Adults: PACE (Pedometer Accelerometer Consultation Evaluation)-Lift Cluster Randomised Controlled Trial.	Google Scholar	The (Pedometer Accelerometer Consultation Evaluation) PACE method and behaviour change technique delivered by the nurse is very efficient in combating physical inactivity. Individual physical activity diary and plan as follow up also helps a lot towards achieving goals.
10.	Fox-Rushby J., et al. (2014).	Numbers are not the whole story: a qualitative exploration of barriers and facilitators to increased physical activity	Google Scholar	PACE-UP and various behaviour change techniques (BCT) were used successfully used as

		in the PACE-UP randomised controlled trial, a primary care based walking intervention.		an intervention in promoting physical activity.
11.	Liu X. X., and J. Hu (2015).	The effects of an intervention on physical activity among nursing home residents in wuhan, china.	Google Scholar	Educational intervention in the form of educational programs on physical activity promotes physical activity among the elderly.
12.	Harris T et al (2014).	OP03 Does a complex intervention by primary care nurses increase walking in 60–75 year olds? Outcomes at three and twelve months from the PACE-Lift (Pedometer Accelerometer Consultation Evaluation – Lift) cluster randomised controlled trial.	Google Scholar	PACE- lift method increases walking in older primary care patients. The use of behaviour change technique (BCT) and individual Physical activity diary and plan was used alongside.
13.	Ho, C.F (2014).	Lifelong Physical Activity as a Predictor in Exercise Beliefs Among Community-Dwelling Adult over 55 Years of Age.	Google Scholar	The author focused on people’s belief in exercise rather than other predictors. It was concluded time factor as in

				lifelong physical activity influences exercise. Other factors including living arrangement and gender were also significant.
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5.3 Data analysis

This section is dedicated to the concise analysis of the literature and to elaborate further how the research question was answered.

Qualitative content analysis has been defined as: “a research method for the subjective interpretation of the content of text data through the systematic classification process of coding and identifying themes or patterns” (Hsieh & Shannon, 2005).

Also “an approach of empirical, methodological controlled analysis of texts within their context of communication, following content analytic rules and step by step models, without rash quantification” (Mayring, 2000).

Data or content analysis is further explained as a research method for analysing written verbal or visual communication messages but when applied to clinical setting it is a relevant strategy for conducting practice-oriented nursing research (Cole, 1988).

In data analysis, in order to arrive at findings that changes raw data into new knowledge, the researcher must have an active analytic approach throughout the phases of the research or study (Sarah thorne, 2000).

5.3.1 Inductive vs deductive

Qualitative content analysis includes processes to process raw data collected into categories and themes based on valid interpretation (Zhang & Wildemuth, 2009).

Qualitative content analysis has two types namely deductive and inductive research.

Inductive analysis is the means by which categories comes from the raw data by the careful scrutiny of the author and constant comparison but does not exclude deductive reasoning (Patton, 2002).

Deductive content analysis is used to test hypotheses or address questions from theories or previous research/ study. Forming concept from theory or previous researches is very important for qualitative research especially at the beginning of the data analysis.

Qualitative content analysis consists of selected texts and phrases which directs the research questions under scrutiny. The author selected inductive approach for the analysis of the study.

5.3.2 Process of content analysis

- **PREPARATION OF DATA**

The author gathered all information and articles. By this point, the author knew the type of content to use and has gathered all articles, which, answers the research question. Since the data is from exiting articles, the texts were closely analysed by what the author intended to know and they were all based on the objective of the study and research question.

- **DEFINE UNIT OF ANALYSIS**

This refers to the unit of text to be grouped during content analysis. Texts are to be grouped before they can be coded, differences in these texts can affect coding decisions as well as the similarities with other studies (De Wever et al., 2006).

Here the author transcribed a code to a text thus the relevant points in the articles were carefully noted and crossed down. As specific points of interest represents a single area of interest that is relevant to the research question, therefore they were grouped as so.

- **DEVELOPMENT OF CATEGORIES AND CODING SCHEME**

Categories/grouping and coding can be derived from these three (3) thus; data, theories and previous related studies. The author had preliminary theory on which she based her own inquiry. The coding manual evolves throughout the process of data analysis.

To ensure consistency of coding scheme in the entire, especially when using multiple coders, the researcher should generate a manual for coding guidance. This consists of the names for the category, definitions to categories and rules and reasons for assigning codes (Weber, 1990). The points of interest as indicted above were listed down individually. Since the author was searching for interventions to promote physical activity, all important data already noted down were categorised into similar groups for simplification.

- **TESTING CODING SCHEME ON SAMPLE OF TEXT**

Here the author analysed and test the definition by coding a sample of the data. The consistency was further checked to assess the clarity. Also the categories were further checked whether they did answer the question of interest.

The problems concerning the definition to categories, rules to coding, or categorizing special cases are to be further analysed and resolved (Schilling, 2006).

- **CODE ALL TEXT**

After the initial done and the author had achieved sufficient coding, it was applied to the entire text body. The author was careful not to drift from the initial coding, because new data collection was likely to emerge and therefore needed to be added to the coding manual (Schilling, 2006).

- **CODING CONSISTENCY ASSESSMENT**

Here the author checked the authenticity and consistency the entire data after coding. Since new codes may be added and the coding rules are likely to change over time, which, leads to inconsistency (Miles & Huberman, 1994).

- **CONCLUSIONS DRAWN FROM THE CODED DATA**

This is a very critical step and its absolute success will rely on reasoning ability. The author makes sense of the identified categories and their properties. The meaning derived from the data are presented and relationship between categories are identified and tested against the full range of the data (Bradley, 1993).

- **REPORT YOUR METHODS AND FINDINGS**

The summary of report from analytical procedures and processes are assigned here. The author reports decisions which he/she undertook to arrive at the coding process, as well as ways used to establish the studies credibility.

In qualitative analysis, the author strives for a balance between the description and interpretation of the data. Description gives readers background and therefore needs to be heavily informed (Denzin, 1989).

5.3.3 Actual data analysis

In this study, the author collected a total number of 21 relevant articles to this study from all various academic databases.

After careful scrutiny of all the articles, the author narrowed to 13, because the article was guided in answering one research question. Although, some of the texts contributed to the entire research, by giving ideas and suggestions which helped in the overall conclusion of the research but they were not useful in answering the research question and were therefore exempted.

On arriving at the research question, the minor goal of the entire research is directed on prevention, diabetes, physical activity, intervention, nurses and the elderly. The major goal was to find nurses interventions to promote physical activity.

Therefore the question was drawn to investigate the above question. Careful analysis of all final 13 articles was made, all articles had at least 4 out of 6 themes included. The articles were numbered from 1...to...13 for easy clarification. The numbers were used in active referencing to the categories.

All articles had health (nurses) interventions to improve physical activity in the lives of the elderly. Although some articles were not specifically relating to diabetes or was referring to other conditions, the main aim was their interventions improved physical activity in the lives of the elderly and therefore can be applied in the lives of the elderly.

The categories used in this literature were created from following the instruction of content analysis. The categories were grouped according to the aim of the entire studies, raw data collected from educational data bases and were also based on theoretical framework used in the literature. They are grouped as follows: **method used at the intervention; whether they were approached individually or grouped with others; nurses' approach before and after preventive program and how they utilized educational program to promote intervention.** With these in mind the author scanned the chosen articles for elements pertaining to these categories in mind and the theoretical framework since it pertained prevention, educational program and health policies like nurses approach. The elements were also categorized surrounding the themes/domains created and the Tannahill model, used in this literature.

5.4 Ethical consideration

This has a very vital role in the whole summary of the research. This helps to prevent violation of any rules associated with writing research. In this modern day, reliability of work is very important and infringement of any kind can lead to punishment and further disapproval of the study.

There is constant scrutiny of researcher's ethical behaviour to avoid fabrication, falsification and plagiarism, etc. (Best & Kahn, 2006). Any misconduct in research processes can negatively influence the society's attitudes towards science (Mauthner et al, 2003).

The author being a student at Arcada University of Applied Sciences, followed the complete guideline and scope of the outlined thesis guide. This study was being commissioned by both Lovisa city through Arcada University of Applied Sciences. There was constant communication between the supervising tutor and the author for proper structuring of the study. All journals, reports, articles, etc. cited by this study was not directly written as the former to prevent plagiarism and neither were they made up but structurally collected with references added.

The articles used for the literature review were collected from academic databases which the author had legal access to by being a registered member of the Arcada. All

text were seen to fully texted and free and in the language understood by the author to prevent wrong translation.

In regard to quotations that the author scripted in their original form, the quotation signs (“”) were placed meaning article was directly quoted or so-called text block thus the text are set apart with different font. All images included were being drawn by the author for easier clarification but those taken from previous studies were accordingly sited.

The whole text is void of any form of fabrication to exaggerate the data but were written in their original form to promote the trustworthiness of this study.

6 RESULT/ FINDINGS

Here the author illustrates how the study answers the research question and how the themes were categorised/coded for clear illustration and understanding. The first part will answer the research question “nurses intervention to improve physical activity for preventing diabetes in the elderly”.

Following the above there will be further specific explanation between physical activity and diabetes using the coding process to elaborate specific articles which discusses them. A total of five (5) categories was deduced from the findings. It includes pace and pars method, group and individual intervention, educational program and nurses’ approach respectively.

PACE, BCT AND PARS Method

Pedometer Accelerometer Consultations Evaluation (PACE) simply means whereby there is assessment of an intervention to increase walking including both pedometer (it counts the number of steps a person takes) and accelerometer (a movement monitor worn usually around the waist to record both step counts and the intensity of physical activity) plus consultation by practise nurse and log books for recording. The articles (9, 10, 12) advocated the use of this method as an intervention to promote physical activity in the elderly. Although, article (10, 12) used behaviour change techniques (BCT) such

goal settings alongside to arrive at the main aim, it was concluded that this method has positive advantage in enforcing physical activity.

Physical Activity Referral Scheme (PARS) helps individuals living with long term health conditions to increase their overall level of physical activity in a safe and structured surrounding. Within this service is health screening, advice and exercise sessions offered by qualified exercise professionals. They are different types of activity within this service. Article (8) discusses the use of PARS to encourage the older adults to increase physical activity. The author added it was able to retain physical activity for up to year through observation.

Group intervention

This means the process of assigning individuals to peer-led intervention groups, whereby the people in the group have similar problems and goals. They therefore work in unison by providing sense of security and serves as watchdog for each other, this promotes continuity and acceptance.

The utilisation of group based intervention in achieving ultimate level of physical activity was discussed in the articles (1, 5, 12). These groups were assigned particular instructions and it was concluded assigning individuals to specific groups helps attain physical activity.

Although they encouraged group intervention, individuals were assessed differently before being grouped with other similar persons and specific methods were applied to achieve this goal. They expressed being in group can motivate individuals to work extra mile when comparing their progress with others within the group.

Whether a person will be recommended group or individual intervention as a way to promote compliance, the bottom line is the person must be assessed in a holistic manner before. There are many forms of support groups such as internet groups where people sought for emotional support and exchange of information when faced with chronic diseases like diabetes and are very useful strategy (Zrebiec & Jacobson, 2001).

The group intervention not only receives its support from other individuals with the same condition but can also be in the form of spousal support which has proved to be useful (Beverly & Wray, 2010).

Individual intervention

This individual functional focus was highlighted by the articles (2, 3, 4, 9). The articles discussed about how tailored activities was assigned based on patient preference, safety issues, etc. after a holistic assessment is done. The authors stressed each individual had different needs and concerns, therefore, type of physical activity or exercise must be according to individual merit.

The use of individual dairy/ log/ plan was discussed in the articles (5, 9, 10, 12) to help individual assess their success and compare with their goals. Though they may be under group intervention, they can always check their personal achievements.

5 A'S approach

The five (5) A's from article (6) is another form of individual intervention which represents:

1. ASK: identification of those who can benefit from the program
2. ASSESS: check for the current level of activity
3. ADVICE: adopt an individualised approach
4. ASSIST: they should be provision of a written script for action and all support material and services
5. ARRANGE: set for appropriate referral and follow up after the program has ended

In addition to the above, other methods can be used to promote physical activity including; interview techniques, the use of practice nurses in a whole practice approach and establishing connections with other community agencies.

This will facilitate positive behaviour change and prevention as well as management of diseases. Individual or self-training has strong evidence to support the effectiveness in the control of type 2 diabetes (Norris et al, 2001). There is also great value associated with individual behavioural ways in their daily lifestyle practice (Di Loreto et al, 2003).

Educational program

Education simply means receiving or giving out instructions or experience. When people share what they know or have experienced it serves as a motivation for others to follow suit. Simply, education serves as good reference for others to follow suit.

The author of the article (11) recommended educational programs as a method to promote physical activity among nursing home residents. They were informed about adverse outcomes of sedentary lifestyle, the benefits of exercise and the various barriers to exercise. Article (13) also believed if they are educated to infuse physical activity in their life long physical activity, therefore it becomes part of their daily life and not as a chore or stressful activity.

After this method was used, he noticed significant improvements in physical activity and its perceived benefits. Educational programs has always shown great impact in the diabetes prevention program by reducing the incidence rate of diabetes up to 58% (DPP Research group, 2002).

Lifestyle education as an interventional method is effective for reducing diabetes' factors associated with high-risk individuals and therefore recommended as a useful tool in preventing diabetes (Yamaoka & Toshiro, 2005).

Nurses' approach (counselling and follow-up)

Counselling is the provision of professional assistance and guidance to help a person resolve his/ her personal and/ or psychological problems (Oxford dictionary, 2015).

In the articles (3, 7) advocated activity counselling as an efficient method of intervention. It should however be executed by highly qualified nurse trained in the field to secure its success.

Follow-ups by the nurse after the patient has being put on a selected method of intervention can prevent plateauing and further quitting of assigned physical activity. This will ensure progress when periodic visits are made. The follow- ups were highlighted by the articles (4, 5, 6).

A significant number of 5 out 13 did a prior and later counselling and follow-up on individuals who had been already assigned to an interventional program. These health workers back up plan helps to motivate patients to exercise for a longer period (Di Loreto et al, 2003). Counselling also helps nurses to identify both internal and external barriers of exercise, when this occurs solutions can be developed to conquer these barriers (Korkiakangas et al, 2009).

7 DISCUSSION

The whole of this study was to raise concern of the increase of diabetes mellitus among the aged in the society and how to prevent with physical activity. The prevalence of diabetes has being a great menace in the society.

Diabetes is a condition that can be prevented with simple changes in our daily lifestyle choices. There is a vast number of serious complication of diabetes including death. People tend to focus on the treatment and prevention of its complication which is time and money consuming and are mostly unsuccessful. There is a way out and that is the focus of this study. The background answered the second question of the study regarding nurses' role in preventing diabetes.

The analysis from the background displays that there is growing concern of diabetes mellitus and can be prevented with physical activity or physical activity and other lifestyle modifications.

The connection between diabetes and physical activity has being evident throughout this entire study. Either physical activity only or it being part a treatment regimen will prevent diabetes. As nurses' it's a duty to explain to our aged clients to add a simple exercise regimen comfortable to them and explain its health benefits to promote continuation.

Many institutions has advocated for the adoption of physical active lifestyle as being effective in promoting high quality of life and preventing chronic diseases in older adults (Nelson et al, 2007).

However due to aging and other health declining factor there is constant decrease in physical activity. This resulted in the objective of this study, how nurses can promote physical activity in the aged. With evidence from the articles used, there is more, nurses can use by assessing patients for what will be beneficial to them the most. This study proves with evident nurses has greater impact on the role in preventing Diabetes in so many ways.

To motivate physical activity in the elderly, there must be certain steps or guidelines nurses' must take. The 13 articles and categories emerged explained these guidelines to take to make physical activity more presentable to the aged. The author being a student nurse looked for interventions according to nurses' perspectives so that it can be applied to field of work.

Whether a person will be recommended group or individual intervention or other methods of intervention as a way to promote compliance, the bottom line is the person must be assessed in a holistic manner before. With the help of members of the health team and use of the intervention based model as a guideline, physical activity can be promoted to prevent diabetes in the elderly.

When these interventions are used, physical activity level will rise and will help prevent diabetes and other equally dangerous conditions in the elderly.

7.1 Findings according to theoretical framework

The intervention based model was chosen the author for its relevance to the course of the study. The author wanted to explore healthy living choices, health education and its benefits so as the aim of the theory.

According to the theory used for this study, there is an overlapping treatment between disease protection, health education and health protection. It elaborates that before healthy living can be achieved all these three domains have to be achieved. The analysis

of the 13 articles used in the study and categories used were created according to this theoretical framework.

The first (1) domain disease prevention: this entire study focuses on prevention of Diabetes. This focused the study to find ways that can help achieve this aim thus interventions to promote physical activity. These include in PACE and PARS, etc.

Second (2) domain, health education: the findings attested that various forms of health education can be done to help the elderly increase physical activity. Also, this study serves as an educational tool for health workers (nurses) to assist their clients and the elderly on how to increase their exercise level through educational means.

Third (3) domain, health protection: these are structures put in place to enhance health. In the findings, methods from nurses' perspectives such as follow-ups and counselling offered to the elderly to motivate them to exercise more.

Concerns are raised that currently nurses are not part of the planning process in the health educational/health promotional activities, and if care not taken nurses would be left out (Whitehead, 2001). Therefore, the study raises concern on nurses' role.

As narrated in the domain 4 and 7, how nurses can utilize health education to teach life skills such as physical activity to improve health so as articles used in the study. The mindful use of all areas of domain in this model will give proper understanding of how disease prevention can be achieved with influences from health education and health protection policies.

Interventions also relies on agencies and stakeholders, and for example, Lovisa commissioning this study they act as a stakeholder of the health of the aged in this circumstance.

Its aim is to motivate people to take the right health action and to promote healthy living among the growing population (the elderly) in the society.

7.2 Critical analysis

The purpose of this literature was to highlight the increasing nature of diabetes as a dangerous conditioning to all, especially the elderly. The increasing rate of diabetes was also brought to light.

The main aim of the study is to elaborate that simple lifestyle changes such as increase in physical activities can curb the growth of diabetes among the elderly. Furthermore, how nurses can do more to help in the prevention program of diabetes. The area of study is very broad comprising in the background useful information on diabetes, the narrowing it to physical activity and diabetes then to the role of the nurse associated in preventing diabetes.

Regarding nurses role, people do not normally associate nurse with the prevention of conditions like diabetes. They see these roles as being too medical and that occurs because of the little information we have on the role of nurse associated with prevention. People often in time associated nurses with bedside care and nothing else and the study elaborated on it in the background chapter but not enough since this study had its limitations. Therefore the study was also used as an educational platform and recommendations are given to others to follow suit if it is in their field of interest.

Whiles the author tried to touch on all relevance areas of interest, it is impossible to cover all these areas. With the use of only 13 relevant articles to discuss these points makes the research relevant enough but short of concrete tools of analysis.

The study had limitation issues such as some useful articles were only available on purchase, the year of publication of articles were between 2000 upward because the author wanted current articles which would indicate relevance to the current situations and time. Notwithstanding this range if the author had unable to get articles, the year range would have been extended. The use of only English literature.

More academic databases was used to search articles but due to lack of relevant articles they could not be used in the literature. The author had the entire study centered on the elderly or old age, they were entered in the search engines to define that the study surrounded these aged grouped individuals.

The intervention based model was used to describe the relationship between disease prevention; the main focus of the study, health education; the study used to give information about diabetes prevention and health protection policies; what this study recommends. They bring out the understanding how these three (3) themes relates harmoniously to highlight the significance of one another as well as explain how they work together to produce success.

The validity and reliability of a study serves as a foundation and therefore must be concisely addressed. The lack of proper reliable and valid assessment of a research work will have huge impact on the credibility of its findings. This creates a poor research work because there is limited understanding of how these features can create doubt of the author's entire work (Sitzia, 1999).

8 CONCLUSION AND RECOMMENDATIONS

The study was made to define the kind of relationship between physical activity and diabetes, nurses' role in the prevention of diabetes and nurses intervention to promote physical activity in the lives of the elderly.

This study reveals that there is a positive relationship between the onsets of diabetes in the aged and physical activity. The study has shown no matter the health regimen designed by a health provider, physical activity must be included to prevent diabetes and further other diseases. Although the effect is of varying levels, they are always successful and therefore needs to be encouraged. Physical activity are of different forms and people can choose which ever type suitable to them and their health. This preventive program can go a long way of promoting the aged living comfortable in their homes without being admitted at various home care institution due to ailments.

The discussed method of nurse's intervention in the articles has being trialed with enormous success as well as significant review and therefore must be advocated and utilized for optimum health benefits.

I hope Lovisa, as the commissioned institution of this study, make avenues for increased physical activity for the aged in any future projects and plans.

There are limited articles in this study and therefore more researches should be carried out to promote the better understanding of their relationship. There should also be more researches on nurses' role in prevention to better the understanding of the importance of nurses in preventive health programs. Furthermore, I would like to encourage upcoming batches of students to research more in physical activities for the elderly as well as gender difference, as time factor and other limitations could not help the author succeed this agenda.

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Finnish Diabetes Association

Type 2 diabetes risk assessment form

1. Age

Under 45 years (0 p.)

45–54 years (2 p.)

55–64 years (3 p.)

Over 64 years (4 p.)

2. Body-mass index
(See reverse of form)

Lower than 25 kg/m² (0 p.)

25–30 kg/m² (1 p.)

Higher than 30 kg/m² (3 p.)

3. Waist circumference measured below the ribs (usually at the level of the navel)

MEN	WOMEN
<input type="checkbox"/> Less than 94 cm	<input type="checkbox"/> Less than 80 cm (0 p.)
<input type="checkbox"/> 94–102 cm	<input type="checkbox"/> 80–88 cm (3 p.)
<input type="checkbox"/> More than 102 cm	<input type="checkbox"/> More than 88 cm (4 p.)

5. How often do you eat vegetables, fruit or berries?

Every day (0 p.)

Not every day (1 p.)

6. Have you ever taken medication for high blood pressure on regular basis?

No (0 p.)

Yes (2 p.)

7. Have you ever been found to have high blood glucose (eg in a health examination, during an illness, during pregnancy)?

No (0 p.)

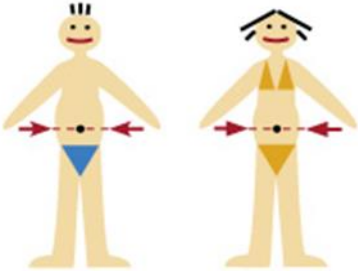
Yes (5 p.)

8. Have any of the members of your immediate family or other relatives been diagnosed with diabetes (type 1 or type 2)?

No (0 p.)

Yes: grandparent, aunt, uncle or first cousin (but no own parent, brother, sister or child) (3 p.)

Yes: parent, brother, sister or own child (5 p.)



4. Do you usually have daily at least 30 minutes of physical activity at work and/or during leisure time (including normal daily activity)?

Yes (0 p.)

No (2 p.)

Total Risk Score

The risk of developing type 2 diabetes within 10 years is

Lower than 7	Low: estimated 1 in 100 will develop disease
7–11	Slightly elevated: estimated 1 in 25 will develop disease
12–14	Moderate: estimated 1 in 6 will develop disease
15–20	High: estimated 1 in 3 will develop disease
Higher than 20	Very high: estimated 1 in 2 will develop disease

Figure 4. Diabetes risk assessment form (Lindström, J., & Tuomilehto, J. 2003)