EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING PREVENTION OF DIABETES MELLITUS AMONG PREDIABETES IN AKILANDAPURAM AT SIVAGANGAI DISTRICT

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A DISSERTATION SUBMITED TO THE TAMILNADU DR. M.G.R MEDICAL UNIVERSITY, CHENNAI, IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR THE DEGREE OF MASTER OF SCIENCE IN NURSING

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CERTIFICATE

This is to certificate that the dissertation entitled **"EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING PREVENTION OF DIABETES MELLITUS AMONG PRE DIABETES IN AKILANDAPURAM AT SIVAGANGAI DISTRICT"** is submitted to the faculty of nursing, **The Tamilnadu Dr. M.G.R Medical University, Chennai by Mrs.M.Vanmathi** in partial fulfilment of the requirement for the degree of Master of Science in Nursing. It is the bonafide work done by her and the conclusion are her own. It is further certified that this dissertation or any part thereof has formed the basis for award of any degree, diploma or any title.

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APPROVED BY THE DISSERTATION COMMITTEE ON SEPTEMBER 2017

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LIST OF ABBREVIATIONS USED IN STUDY

WHO	:	World Health Organisation
DM	:	Diabetes Mellitus
T2DM	:	Type 2 Diabetes Mellitus
IDRS	:	Indian Diabetic Risk Score
SIM	:	Self Instructional Module
IFG	:	Impaired Fasting Glucose
IGT	:	Impaired Glucose Tolerance
HBA1C	:	Glycosylated Hemoglobin
OGTT	:	Oral Glucose Tolerance Test
NGT	:	Normal Glucose Tolerance
NCD	:	Non Communicable Disease
WHR	:	Waist Hip Ratio
PCCs	:	Pearson Correlation Coefficients
PCOS	:	Polycystic Ovarian Syndrome
BMI	:	Body Mass Index

ABSTRACT

The study on **"EFFECTIVENESS OF SELF INSTRUCTIONAL MODULE ON KNOWLEDGE REGARDING PREVENTION OF DIABETES MELLITUS AMONG PREDIABETES IN AKILANDAPURAM AT SIVAGANGAI DISTRICT"** was under taken by **REG. NO: 301611853** during the year 2017-2018 in partial fulfilment of the requirement for the degree of Master of science in Nursing at RASS Academy College of Nursing, Poovanthi which affiliated to The Tamilnadu Dr.M.G.R Medical University, Chennai.

Objectives: Assess the pre test level of knowledge regarding prevention of diabetes mellitus among pre diabetes .Evaluate the effectiveness of self instructional module on knowledge regarding prevention of diabetes mellitus among the prediabetes .Find out the association between the pre test level of knowledge of pre diabetes with their selected demographic variables. **Conceptual frame work:** The study was based on General System theory by Lud wig von Bertalanffy (1968). **Approach:** Evaluatory apporoach was adopted for this study. **Design:** pre experimental one group pre-test post-test design was adopted for this study. **Setting:** The study was conducted at 26th ward Akilandapuram at sivagangai district. **Sample Size:** The sample size was 50 pre diabetic people. **Sampling Technique:** The Non probability purposive sampling technique was used to select the samples. **Methods of data collection procedure:** The samples were screened with IDRS, and FBS was taken before the data collection to know the eligibility. Data was collected from the selected pre diabetes people to assess the level knowledge by using semi-structured knowledge questionnaire before implementation of self instructional module. Post test was conducted 1 week after administration of self instructional module, the level of knowledge was assessed. **Result:** The result showed that, there was a significant difference between pre-test and post-test level of knowledge regarding prevention of diabetes mellitus among Pre diabetes. The obtain 't' value (26.52) was greater than the table value at 0.05 level of significant. **Conclusion:** This study concludes that Self Instructional module was effective in improving the level of knowledge regarding prevention of Diabetes mellitus among pre diabetes

CHAPTER – I

INTRODUCTION

"Good health is the greatest blessing of life and its a weary burden to person of broken health .The richest man with bad health always suffers and groans.He is unhappy inspite of his great health."

- Vijay

The pancreas is a long,slender organ,most of which is located posterior to the bottom half of the stomach pancreatic islets clusters of cells formerly known as the islets of Langerhans – secreate the hormones glucagon,insulin, somatostain,& pancreaticpolypeptide. The enzymes secreted by the exocrine gland in the pancreas help break down carbohydrates, fats, proteins, &acids in the duodenum. These enzymes travel down the pancreatic duct in to the bile duct in an inactive form. The main hormones secreted by the endocrine gland in the pancreas are insulin &glucagon.The imbalance of these hormones especially insulin leads to a debilitating illness known to as diabeteic mellitus. **Ross and Wilson (2006)**

Diabetes mellitus is a group of metabolic disease   caused by inherited or and acquired deficiency in production of insulin by the pancreas or by the in effectiveness of the insulin produced. Such a deficiency results in increased counteraction of glucose in the blood, which is turn damage many of the body's system, in particular the blood vessels and nerves. (**WHO 2017**)

It is a group of diseases occurring in three major types, they are Type 1, Type 2 and gestational diabetes. Type1 also called as insulin dependent or juvenile onset diabetes, is an auto immune disorder caused by destruction of the beta cells of pancreas that produce insulin. This was mainly due to the genetic predisposition develops in childhood and adolescence. Gestational diabetes appears during pregnancy because of the insulin blocking hormones which goes to a normal state after the delivary. **Diabetes association (2018)**

The type 2 diabetes is a more common chronic disorder among the other types which is insidious in onset and often diagnosed at the later stage. The four metabolic

abnormalities play a role in the development of Type 2 diabetes, they are **1.** Insulin resistence **2.** Decrease in the ability of pancrease to produce the insulin **3.** Inappropriate glucose production by the liver **4**. Alteration in the hormones and cytokines by adipose tissue. About 30.3 million people in the united states have diabetes in which 90 to 95% have type 2 and 5 to 10 % have type 1. The prevalence of diabetes (DM) is constantly increasing worldwide at an alarming rate. According to the International Diabetes Federation in 2015, an estimated 415 million people globally were suffering from this condition. The prevalence of type 2 increases with age ,with about half of the people diagnosed being older than 55.In the past type 2 was known as adult onset diabetes.but this is is no longer considered appropriate because the disease is now being seen increasingly in young adult. **Davita (2017)**

The risk factors for developing contain genetic factor and non active lifestyle such as being overweight, low levels of the good cholesterol, high blood pressure (hypertension), polycystic ovary syndrome, elevated level of triglycerides in the blood and gestational diabetes during a pregnancy. The most powerful risk factors is believed to be obesity, specially abdominal and visceral adiposity.

The most common symptoms of diabetes mellitus especially frequent urination (polyuria) frequent thirst (polydipsia) & intense hunger (polyphagia). Other symptoms of weight gain, increased fatique, irritability, blurred vision. itchy skin, frequent gum disease,sexual dysfunction among men,numbness or tingling,especially in your feet&hand. Type 2 diabetes can cause dark patchy skin in your arm pits and neck. Since type2 diabetes often takes longer to diagnose, the symptoms may be felt at the time of diagnosis (**American diabetes association).**

Moreover they can cause major damage to the body overtime if left untreated or improperly manage. It can hurt the heart, blood vessels, eyes, kidneys and nerves. Reduced blood flow also causes nerve damage in the feet, which can lead to ulcer, infections & eventually, limb amputation. Diabetes retinopathy can lead to blindness, **quora (2017).**

Diabetes is a serious and costly disease which is becoming in creasingly common especially in developing countries&disadvantaged minorities. However, there are ways of preventing it &controlling it's progress, through creating an

awareness about prevention of diabetes in Pre diabetes population. Pre diabetes, a precursor for developing diabetes is a state where the FBS are higher than normal but sufficient to diagnose diabetes. Its also known as impaired glucose tolerance (IGT) or impaired fasting glucose,is condition in which blood glucose levels are higer than normal (>100 mg/dl) but <126mg/dl but not enough for a diagnosis of diabetes. Most people with prediabetes are at increased risk for developing type2 diabetes, and if no preventive measures are taken, they will usually develop it with in 10 years. **WHO 2014.**

Maintaining a healthy weight, regular exercise and physical activity makes a huge difference in your health and quality of life. In minor changes in your lifestyle can greatly reduce your chance of getting this condition. Action should be taken regarding the modifiable factors that influence its development lifestyle and dietary habits. However with proper testing, treatment and life style, change, healthy eating as strategy, promote walking, exercise and other physical activites have beneficial effects on human health and prevention or treatment of diabetes, promoting adherence to this pattern is of considerable. **Mohammad Asif (2014)**

NEED FOR THE STUDY

"Good health and good sence are two of life's greatest blessing"

-Dr. APJ Abdulkalam

Peer (2017) Diabetes is a chronic metabolic progressive disorder occurs when the pancreas not producing enough insulin or the cells of the body not responding properly to the insulin. It is group of metabolic disorder manifesting in three different types such as type 1, type 2, gestational diabetes mellitus with abnormally high levels of sugar in the blood. Type 2 diabetes is a very common, comprise the majority of people with diabetes around the world. And is largely the result of excess body weight physical inactivity.It is (formerly called non-insulin dependent or adult onset) result from the body's ineffective use of insulin .Type 2 diabetes makes up about 90% of cases of diabetes mellitus.

Gojka Roglic, et.al., (2014) had conduted the study was global prevalence of diabetes. Involve the all age group with diabetes for year of 2000 and 2030. The prevalence of diabetes for all-groups world was estimated to be 2.8% in 2000 to 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in2030. The prevalence of diabetes is higher in men than women, but there are more women with diabetes than men. The urban population in developing countries is projected double between 2000 and 2030.they concluded that the study was "diabetes epidemic" will continue even if levels of obesity. Remain constant.

According to **Wild et.al. (2014)** the prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. It is predicted that by 2030 diabetes mellitus may afflict up to 79.4 million individuals in India, while China (42.3 million) and the United States (30.3 million) will also see significant increases in those affected by the disease.[3,4] India currently faces an uncertain future in relation to the potential burden that diabetes may impose upon the country. Many influences affect the prevalence of disease throughout a country, and identification of those factors is necessary to facilitate change when facing health challenges.

WHO (2017) In India 422 million people affected diabetes mellitus .The global prevalence of diabetes among adult over 18 years of age has rise from 8.5% in 2014. In 2015 an estimated 1.6 million death were directly caused by diabetes in 2012 another 2.2 million death with attributable to high blood glucose level. Healthy diet, regular physical activity, maintaining a normal body weight and avoiding tobacco use are ways to prevent or delay the onset of type 2 diabetes.

Patient centred outcome research institute (2015) Prediabetes is a condition where the blood glucose level are elevated but are still below the threshold for diagnosis of diabetes mellitus. Prediabetes is diagnosed by HbA1c, Fasting plasma glucose and oral glucose tolerance test. In 2012, 86 million U.S adults had prediabetes, which translates to 37% of adult aged 20 years and older and 51 % aged 65 years or older, and the prevalence is increasing. Prediabetes is a major risk factor for developing type 2 diabetes with 10% to 25% of people with prediabetes within 3 years, and 40% to 60 % within 10 years.

American diabetes association (2014) 37% (86million) in U.S. Adults aged 20 years or older have prediabetes. 51% aged above 65 years and only 11% were aware they had it in adolescents aged 12 to 19 years prevalence of prediabetes and diabetes increased from 9% to 23%. **International diabetes federation (2015)** 30.3 million Americans had diabetes. 84.1 million American age above 20 and older had pre-diabetes. There are 79,535 death certificate listing it as the underlying causes of death,& a total of 252,866 death certificate listing diabetes as an underlying or contributing cause of death.

Pradeepa R et.al., (2017) had conducted the study was prevalence of diabetes and prediabetes in 15 states of india. We used a stratified multistage design to obtain a community based sample of 57 117 individual aged 20 years or older. The sample population represented 14 of india 28 states. The prevalence of diabetes in different states was assessed in relation to socioeconomic status (SES) of individuals and the per-captia gross domestic product (GDP) of each states. The over all prevalence of diabetes in all 15 states of india (95% ci 7.0-7.5) however in urban area of some of the more affluent sates (tamilnadu, maharastra) the study was concluded that there are large difference in diabetes prevalence states in india.

Pushpa Narayan (2014) One out of 10 people in Tamil Nadu is diabetic, and every two persons in a group of 25 are in the pre-diabetic stage. These statistics from phase 1 of the Indian Council of Medical Research's INDIAB (India-diabetes) nationwide study have confirmed some of the worst fears of medical experts and policy makers, and come as warning signals to the public at large. Nearly, 80% of people have abnormal lipid profile, which means high amount of fat and bad cholesterol, coupled with low levels of good cholesterol. About 28% are hypertensive and 20% have high cholesterol

NCD survey (2015) National capacity to prevent and control diabetes as assessed varies widly by region and country income level most countries report having national diabetes policies as well as national policies to reduce key risk factor and national guidelines or protocols to improve management of diabetes many countries have conducted national population based survey of the prevalence of physical inactivity and overwight and obesity in the past 5 years, but less than half have included blood glucose measurement in the these survey.

Pre diabetes typically does not cause symptoms, but it nevertheless associated with lower quality of life and shorter life span. Due to elevated rates of over weight ,obesity and cardiovascular diseases, they have a higher chance of developing serious complications.The primary goal of prediabetes management is type 2 prevention through lifestyle changes like diet, exercise and behavioural modification.

Hence from the above mentioned studies the investigator felt that strengthening the knowledge of preventive aspects of diabetes in pre diabetic population might reduce their risk of developing the disease ,the mortality rate and improves the of quality of life.Awareness of preventive measures is an important predictor in preventing diabetes mellitus .The present study is designed to assess the knowledge level of prediabetes population and administer a self instructional module which will educate them about the measures to followed.

Statement of the Problem

Effectiveness of self instructional module on knowledge regarding theprevention of diabetes mellitus among the pre diabetes in akilandapuram at sivagangai district.

The Objectives of the study were,

- ➢ To assess the pre test level of knowledge regarding prevention of diabetes mellitus among pre diabetes.
- ➢ To evaluate the effectiveness of self instructional module on knowledge regarding prevention of diabetes mellitus among prediabetes.
- ➢ To find out the association between the pre test level of knowledge of pre diabetes with their selected demographic variables.

The Hypothesis of the study were,

- ❖ **H1 :** There is a significant difference between pretest and post test level of knowledge scores regarding prevention of diabetes mellitus of pre diabetes

- ❖ **H2**: There is significant association between pretest level of knowledge and baseline data of prediabetes.

Operational Definitions

Effectiveness: In this study, it refers to the extent to which the self instructional module will achieve desired effect in gainig knowledge regarding prevention of diabetes mellitus in terms of difference between pre test and post test level of knowledge measured by semi structed questionnaire.

Self instructional module: In this study, it refers to the systematically organized information prepared by the investigator in the forms of booklet, provide the pre diabetic people regarding prevention of diabetes mellitus in order to improve their level of knowledge

Knowledge: In this study, it refers to the facts, information acquired through education by pre diabetes regarding prevention of diabetes mellitus.

Prevention: In this study, it refers to the measures taken to reduce the occurrence of diabetes mellitus among pre diabetes.

Diabetes mellitus: It is a chronic multisystem disease related to abnormal insulin production, impaired insulin utilization, or both.

Pre diabetes: It refers to the individuals both male and female who are having FBS ranging from 100 gm /dl to   126gm/dl,but which are not high enough to cause to diabetes.

Assumption

The study assumed that,

- ❖ The pre diabetic people may have inadequate knowledge regarding prevention of diabetes mellitus

- ❖ Pre diabetic people are at high risk of developing diabetes and their FBS will be between 100 to 126 gm/dl.

- ❖ Self instructional module will enhance the knowledge of prevention of diabetes mellitus

Limitations

- ❖ The study was limited to 50 samples.

- ❖ The study was limited to a local area only

- ❖ The study was limited to pre diabetic people and not to general population.

- ❖ The researcher had only 4 weeks time for data collection

- ❖ The present study only assessed the knowledge level of diabetes and their prevention.

Projected Outcome

The study will reveal the importance of self instructional module in improving the knowledge regarding the prevention of diabetes among the pre diabetes.

Conceptual Frame Work

The present study aim at evaluating the effectiveness of Self Instructional module on knowledge regarding prevention of diabetes mellitus among ata risk non diabetics the frame work of the present study based on the general system theory by Ludwig von Bertalanffy (1968)

System

A system is a collection of independent but interrelated elements or components organized in a meaningful way to accomplish an overall goal. The function of any system is to convert or process materials, energy or information (inputs) in to a product or outcome for use within the system, or outside of the system (the environment) or both. Various system components have functional and structural relationship between each other and are organized in way to accomplish a specific function or set of functions. To be part of the system any element must have a relationship with at least one element of the system. Any element which has no relationship with any other element of the system cannot be a part of that system.

In this study the system refers to 50 non diabetic people in 26th ward Akilandapuram. In Sivagangai. Samples selected by purposive sampling technique.

Elements

Elements or components are the things, parts, or substances that make up the system. These parts may be humans, equipment, instruments, etc.

The elements of the system are the various demographic variables that make up the system. (Pre Diabetic) the people selected were having demographic variable age, gender, religion, marital status, occupation, diet, education, personal habits, any family history of diabetes mellitus, sources of information related diabetes mellitus these variables always affect the system.

Input

In this study is self instructional module on prevention of diabetes mellitus among at risk non diabetic and the researchers effort to plan and organize the teaching programme. It consist of information related to anatomy and physiology of pancreas,

diabetes mellitus –definition, types,riskfactor,signs and symptoms , complication, prevention of diabetes mellitus. A pre-test to assess the existing knowledge of the people was conducted followed by the instructional module.

Through Put

Throughput is the processes used by the system to convert energy (INPUTS) from the environment in to products or services that are usable by either the system itself or the environment.

In the present study throughput is the thinking and analysing process that goes through the system variables such us age, gender, type of family, income, marital status, diet educational qualification, occupation, family history of diabetes mellitus, personal habits, sources of information related to diabetes mellitus..

Output

Output is the product or service which results from the system throughput or processing technical, social, financial &human input. Examples include health service better health, documents decision, etc.

In the present study, output was measured by post-test by administering structured questionnaires and finding its result. There was an increase in knowledge of prevention of diabetes mellitus.

Feed Back

Feed Back is information about some aspect of data or energy processing that can be used to evaluate and monitor the system and to guide it to more effective performance. After the effectiveness was found, no intervention were provided. There was an increase in knowledge after administering Self Instructional module.

SYSTEM ELEMENTS

- ✓ Demographic variables like Age, Gender, Religion, Occupation, Diet, Education, Personal Habits, Source of Information Related Diabetes Mellitus and find out the IDRS Scale Level

- ✓ Pre test by structured knowledge questionnaire on prevention of diabetes among at risk non diabetic

INPUT

- ✓ Self instructional module on prevention of diabetes mellitus

THROUGH PUT

Age, Gender, Religion,

Occupation Education Personal

SYSTEM

Source of Information on Diabetes Mellitus

Personal Habit

FEEDBACK

OUT PUT

Post test by structured knowledge questionnaire on prevention of diabetes mellitus

Adequate

Moderate

In Adequate

FEED BACK

FIGURE: 1 MODIFIED CONCEPTUAL FRAME WORK BASED ON GENERAL SYSTEM THERORY BY LUDWIG VON BERTANLANFFY (1968)

CHAPTER – II

REVIEW OF LITERATURE

A literature review is an organized written presentation of what has been published on a topic scholars (Burns&Groove, 2014).

Review of literature refers to the activities involved in the identifying and searching for information on the topic and developing an understanding of the state of knowledge on that topic. Reviews of literature are also published as freestanding exploration of a body of knowledge. The task reviewing research literature involves the identification, selection, critical analysis and written description of existing information on a topic.

Literature review can search a number of important function such as identification of the topic, to ascertain what is already known in relation to problem of interest to develop a broad conceptual context in to which a research problem will fit and to suggest ways to going about the business of conducting a study on a topic of interest. Review of literature is organized and presented under the following headings;

The review of literature for this study is presented under the following headings

- ➢ **Literature related to Diabetes mellitus**

- ➢ **Literature related to knowledge of diabetes mellitus among pre diabetes.**

- ➢ **Literature related to other teaching programme in improving the knowledge regarding prevention of diabetes mellitus among prediabetes.**

- ➢ **Literature related to effectiveness of self instructional module in improving the knowledge regarding prevention of diabetes mellitus among prediabetes.**

I. Literature related to Diabetes mellitus

Abbas alm. et.al., (2017) had conducted a cross sectional study to assess the risk factors associated with diabetes mellitus among 144 persons in saudi community. The risk of developing diabetes increases with some risk factors including family history, age, obesity and lack of physical activity it is highly significant to allocate resources to quantify the prevalence of diabetes through preforming an assessment of the blood glucose level of the target population designed this study to determine the association between certain demographic and clinical variables and random blood sugar among Saudi population.the study provided information about the association between certain demographic and clinical variables. The study were concluded that association between certain demographic and clinical variables and random blood sugar among Saudi population.

Xiao yin et.al (2017), was performed the cross section study of prevalence of diabetes mellitus and risk factors and situation of disease management in floating population in china. The result revealed that the prevalence rate of diabetes in floating population in china was 5.1%. The comparison result between the prevalence of floating population and local population in each region differs in local survey. In additional, the prevalence of male floating population is lower than that of the female population. The study concluded that low level of education, poor living condition and other reasons, the health status of the population is poor and prevalence of chronic diseases is very high.

Yuqian li. et.al, (2016) had done a meta analysis to assess the prevalence, awareness treatment and control of type 2 diabetes mellitus and explore potential risk factor in 16413 individual of age group between 18-74 residing in rural areas of china. The prevalence, awareness, treatment and control of Type 2DM displayed increased trends with age (p trend<0.01) and were strongly associated with education, drinking, intake of more vegetable and fruit, physical activity and family history of diabetes mellitus. The result was concluded that the pooled prevalence awareness treatment and control of Type 2DM in china countryside were 7.3% (5.3-9.4), 57.3% (36.9-77.66%), 48.4%(32.4-64.5%) and 21.10%(9.9-32.1%)resepectively.

Rugmani prabhakar et.al., (2015) has done astudy prevalence of diabetes and pre-diabetes assessment of their risk factors in urban slums of bangalore.this study was cross-sectional, community based study among aged 35 years and above in four urban slums located in the central part of Bangalore.the total population of the four slums was 6127 out of which 2075 individuals were over the age of 35 years. Variables which exhibited a statistically significant association on univariate analysis p value of <0.05 was considered to be significant for all analyses. They result was concluded that to educate on symptoms, complications, treatment and prevention of diabetes is effective.

Osama hamdy et.al., (2015) had performed the study to describe the epdermiology,principal causes,associated risk factor,cultural aspects,and challenge that may contribute to the rapid rise in T2DM in Egypt . The finding revealed the study was sharp rise could be obesity and physical inactivity and change in eating pattern, exposure to environmental risk factors like pesticides and increased prevalence of chronic hepatitis c.They concluded that study was the prevalence of typr 2 diabetes in Egypt is around 15.6% o and prevention, early identification ,and effective intervention are integral components of effective T2DM care in Egypt. These strategies may reduce the expanding economic burden associated with T2DM.

Veena.G. et.al., (2014) had performed the study diabetes prevalence and its association with IDRS among patientsattendees of tertiary care hospital.A cross sectional study was conducted in tertiary care among attendees of were aged more than 30 years 406 individuals were screened for diabetes using IDRS score and random blood sugar. The result was over all prevalence was found 8.6% with maximum male (12.68%) as compared to female (4.47%) p=0.0056, it was observed that mean blood sugar was increased significant with low risk only 4.92% in individual.individual in high risk (57.63%) with moderate risk (37.43%) and low risk only 4.92% obesity, lack of exercise family history has been identify as significant risk factor for occurrence of diabetes. They study was concluded that IDRS is very useful cost effective tool to detect undiagnosed diabetes in the community and also, as very good risk indicator for diabetes.

II.Literature related to knowledge of diabetes mellitus among prediabetes

Kaniz fatema et.al., (2017) has undertaken a cross- sectional study to explore knowledge, attitude and practice (KAP) regarding diabetes mellitus (DM) among 6780 non diabetic (nonDM) and 11,917 type 2 diabetes mellitus (T2DM) patients aged 18years and above in the OPD of 19 healthe care centres in and around Dhaka and northern parts in Bangladesh. Structured interviewer administered questionnaire was used. The proportion of knowledge scores among type 2 DM were 17%, 68% and 15% respectively. And the attitude scores were 23%, 67% and 10% respectively. They concluded that the knowledge, attitude and practice was found to be significantly higher in Type 2DM subjects rather than the non DM subjects. They showed that coordinated educational campaign focusing on priority is needed to prevent diabetes and its complication.

Remona brown (2017) had conducted the study assessing for awareness and knowledge regarding diabetes in pre-diabetes obese patient. A convenience sample 30 participants was recruited from patient seeking care at a family practice clinic Data collection was conducted using the Michigan diabetes research and training center's diabetes knowledge test .pre test and post test were used to evaluate improvement in the participants knowledge and awareness after administer of education session. The 't'test indicated a significant (p<0.000) the study was concluded that improving knowledge and awareness of diabetes among obese patient with prediabetes would increase their participation in lifestyle and behavioural modification programme.

Weerasingh et.al., (2017) had performed the cross sectional study of knowledge, attitude, and practice related to diabetes mellitus among 227 the general population in southern sri lanka. The cluster sampling technique and KAP questionnaire was adopted for the study. The result of the study the majority (77%) had either moderate (39%) or above moderate knowledge (38%) on diabetes mellitus. Even though level of education was significant and positively associated with knowledge (p=0.001) they study was concluded that more emohasis should be given to address the issue of poor attitude and practice towards diabetes mellitus.

Ali Naseri bafrouei(2017) had performed the study was to determine and compare the prevalence of pre-diabetes and type 2 diabetes mellitus (T2DM) among 12,455 sami and non-sami men and women of rural district in northern Norway. It is a cross sectional population based study performed in 10 municipalities of orthern Norway.the data were collected through survey and Participants self-reported T2DM and or a glycated haemoglobin result> 6.5% were categorised as having pre diabetes T2DM (10.8%vs9.5%) pre diabetes (p<0.001) and T2DM(p=0.042). The self administered questionnaire was used. The result revealed that in women,pre diabetes (36.4%vs 33.5%). They study was concluded that the differences in both pre diabetes and T2DM were also statistically significant.The observed ethnic difference in the waist to height ratio was a plausible explanation for the ethnic difference in the prevalence of pre-diabetes and T2DM.

Subhranil saha et.al., (2015) had performed a study knowledge attitude and practice related to diabetes mellitus among diabetes and non diabetes in west Bengal,india A cross sectional study was conducted in 273 diabetes and 355 non diabetes in 3 government homeopathic hospital. A self administered questionnaire assessing normal blood sugar level. A total of 35.5% to 46.5% said that diabetes was preventable 14.1% to 31.9% knew that diabetes was controllable rather than curable. The result of diabetes had higher knowledge and awareness than non diabetes (p<0.0001) They study was concluded that latter need to be made aware and knowledge to curtail the ever increasing burden of diabetes.

Harmanpreet kaur et.al., (2017) had conducted the study was to assess the knowledge regarding diabetes mellitus among the residence of selected rural community in Punjab. A non experimental quantitative study research approach was used. Research design was inpresent study to assess the knowledge regarding diabetes mellitus A self structured checklist was used. The result of the study 90% of average knowledge 9% have good knowledge 1% was poor knowledge. The mean score was good knowledge was 21.77. They study concluded that analysis of the data regarding the assessment level of the knowledge regarding diabetes mellitus.

Gegory wozniak et.al., (2013) had performed the study was to assess the medical student knowledge of prediabetes and diabetes prevention. Collected a total

of 197 suvey response among 596 medical student.questionaire designed to test of medical student for pre diabetes prevalence among us.adult,risk factor for prediabetes,screening for prediabtes,the result of the study full survey 37.9% 1st year 37.1%,4th year 43.1%.preclinical score were higher among 4th year student (p<0.10) compared to 1st year student. They study was concluded that improve the student knowledge about prediabetes.

Literature related to other teaching programme in improving the knowledge regarding prevention of diabetes mellitus among prediabetes

Thankalam (2014) has evaluated the effectiveness of a structured teaching programme on knowledge and practice regarding prevention of type 2 diabetes mellitus among 80 adolescents in 9th standards of 4 schools in kerala. In quantitative experimental control experimental groups and pretest-post test design was used for the study. Twenty subjects from each school were designed to control and experimental groups. Pretested, validated questionnaire and life style inventory were tool used. Ethical clearance school permission and assent obtained. The result of T2DM was present in (56.2%) families (81.3%) complication (51.3%) significant differences seen between pretest –post test knowledge (p=.003) and lifestyle (p<0.001) in experimental group after STP. The study concluded that rural subjects showed significant difference in knowledge and activity between pretest and post test (p<0.001). Education is effective to enhance knowledge and healthy lifestyle, proactive campaigns against T2DM should be include that successful prevention of type 2 diabetes mellitus.

Veeresh(2017) had conducted the study was To assess the effectiveness of planned education programme on knowledge regarding enhancing quality of life among diabetic patient.total 100 sample were selected using simple random sampling techiqune was used.an experimental one group pretest post test without control group design was adopted. The result was mean pretest knowledge score was 12.32+/-3.28 and post test knowledge score was 24.67+/- 0.98. The study was concluded that the knowledge to enhance quality of life among diabetic patient which bring confidence in self care diabetes patients.

Tanju gurkan et.al., (2012) had performed the study was to evaluate the effect of patient education on knowledge,self managementbehaviours and self efficacy in patient with type 2 diabetes. The study was conducted that an outpatient clinic. A randomised single blind controlled study was designed to assess the effect of education using a pre and post design. The result of the study there were significant difference between the intervention and control groups. Improvement were observed in taking regular walks (p=0.043), regulating blood glucose levels to avoid complication (p=0.002) and self efficacy .The study was concluded that patient education had a limited effect on knowledge and self management behaviours but a significant effect on self efficacy in patients with type 2 diabetes.

Janine (2016) had performed the study prediabetes screening and primary care education needs.the prevalence of prediabetes is on a continual rise 86 million persons or 33% of the population diagnosed. The purpose of this capstone to determine current screening practise.this retrospective exploratory descriptive study reviewed current screening practise for the three identified sites, total randomly 300 records prediabetes score as calculated AMA prediabetes screening tool was 8% indicating that prediabetes screening was conducted per ADA guidelines 8% of time They study was concluded that effectiveness of primary care of education needs for prediabets.

III. Literature related to effectiveness of self instructional module in improving the knowledge regarding prevention of diabetes mellitus among prediabetes.

Priya Thomas (2017) has conducted a study to determine the effectiveness of Self instructional module on knowledge regarding the prevention of Diabetes among at risk non diabetes. The study samples were 100 risk non diabetes and were selected based on purposive sampling technique. The data were collected using structured questionnaire and knowledge was imparted through the self instructional module. The study findings revealed that majority(61%) had average knowledge,5 had good knowledge and 34 had poor knowledge in pretest .After the programme, in the post test majority(52) gained good knowledge about diabetes and its prevention,48 had average knowledge. They concluded that self instructional module was found to be effective in improving knowledge as regarding prevention of diabetes among at risk non diabetes.

CHAPTER – III

RESEARCH METHODOLOGY

The methodology of research study is defined as the way the information from participants is gathered in order to answer the research questions or analyse the research problem.

This chapter deals with the methods adopted by the researcher to find out the effectiveness of self instructional module on knowledge regarding prevention of diabetes mellitus among pre diabetes. It deals about the research approach, research design, the setting, population, and sample size, sampling technique, development and description of tool, validity, reliability, pilot study and procedure for data collection for data analysis.

Research approach

Research approach is the most significant part of any research the appropriate choice of research approach depends on the purpose of research study.

Evaluatory approach was used in this study. It aimed to evaluate the effectiveness of self instructional module on knowledge regarding prevention of diabetes mellitus among prediabetes.

Research design

Pre experimental one group pre test and post test design was adopted for this study. The diagrammatic presentation of the design was represented below.

GROUP	PRE-TEST	EXPERIMENT	POST-TEST
E	O1	X	O2

Table-1 Research Design

E - **Pre Experimental group**

O$_1$ - **Pretest level of knowledge**

X - **Self instructional module**

O$_2$ - **Post test level of knowledge**

Variables under the study

Independent variable: Self instructional module rendered by the research to the pre diabetes people on prevention of diabetes.

Dependent variables: Knowledge regarding prevention of diabetes mellitus among prediabetes was dependent variable in this study.

Setting of the study

The study was conducted in urban area of 26th ward of Akilandapuram at sivagangai district, which is 25km away from our Nursing institute. 1000 people survive in this area in which 650 people are adult, 200 people are old age and 150 people are children.

Target population

The male and female who are above 20 years of age group and at risk of developing diabetes or in pre diabetes state.

Accessible population

The male and female who are above 20 years of age group, at risk of developing diabetes or in pre diabetes state residing in 26th ward Akilandapuram people.

Sample

The persons who are above 20 years of age group and who fulfil the inclusion criteria was considered as sample.

Sample size

The Sample size consists of 50 people residing in 26th ward in Akilandapuram at sivagangai district

Sampling technique

The Non probability – purposive sampling technique was used for this study.

Criteria for sample selection

The samples were selected based on the following inclusion and exclusion criteria.

Inclusion criteria

➢ Residing in the urban area of 26th ward in Akilandapuram at Sivagangai district.
➢ Above 20 years of age**.**
➢ Non diabetic with FBS will be between 100 to 126 gm/dl.
➢ Willing to participate in this study.
➢ Able to understand Tamil.

Exclusion criteria

The study excluded those people who were

➢ Diabetes
➢ not present at the time of data collection

Research tool and technique

The instruments used in this research study consisted of two section.

Section A

It comprised of IDRS (Indian diabetic risk score) with four components.The four components are age, waist circumference, physical activity and family history of diabetes. The score ranges from 0 to 100 in which above 60 indicates high risk, 60 to 30 indicates moderate risk and below 30 indicates low risk.

Section B

It comprised of demographic variables such as age, gender, religion, occupation, diet, education, personal habits of the sample and Source of information.

Section C

It consists of semi structured questionnaire to assess the samples knowledge regarding diabetes.It consists of 30 multiple choice questions.

Part 1: it comprised of general information regarding diabetes mellitus.

Part 2: it comprised of information regarding prevention of diabetes mellitus.

Scoring Procedure

There were four choices, out of which one were correct answers and the remaining three were wrong answers. A score value of 'one' was allotted to each correct response. 'zero' was rewarded for the wrong response. Thus there were 30 maximum obtainable scores. The level of knowledge was graded based on percentage of scores obtained.

Level of knowledge

- Adequate - above 75%
- Moderate - 50 to 75%
- Inadequate - below 50%

Section D

It comprised self instructional module on knowledge regarding prevention of diabetes mellitus among prediabetes. The content on prevention of diabetes mellitus was prepared through literature review and in consultation with experts. The content of the self instructional modules was organized well by the following headings

- ❖ Introduction of diabetes mellitus
- ❖ Anatomy of pancreas
- ❖ Function of pancreas
- ❖ Definition of diabetes mellitus

❖ Incidence of diabetes mellitus

❖ Risk factor and causes of diabetes mellitus

❖ Pathophysiology of diabetes mellitus

❖ Signs and symptoms of diabetes mellitus

❖ Complication of diabetes mellitus

❖ Prevention of diabetes mellitus

Testing the tool

Content validity

Assessment tool was evaluated by experts from the field of nursing and medicine for content validity. Suggestion were considered and appropriate changes were done and to made the tool to be valid

Reliability

Reliability of the entire tool was analysed by split half method. The internal consistency of the entire tool was established (r'=0.99) which indicates that structured knowledge questionnaire was reliable.

Pilot study

Pilot study was conducted in poovanthi at sivagangai district for the period of one week with 5 people in order to test the feasibility, relevance and practicability of the tool. The result shows that the tool was feasible to carry out the main study.

Data collection procedure

Before starting the study, investigator obtained formal permission from 26th ward councellor Akilandapuram at sivagangai district. The investigator introduced herselves to the samples individually and verbal consent was obtained from each subject after giving assurance of confidentially, security and identity. The samples were screened using IDRS scale and fasting blood glucose was done. Based on the scores, the samples were categorised and most of them were at moderate and high risk of developing diabetes. Those samples FBS was between 100 to 126mg/dl. The pre level of knowledge and the demographic data were collected from the selected

samples using the semi structured questionnaire. The researcher spent around 20 minutes for each sample. The data was collected for a period of two weeks. Self instructional module was administered. The post test of study was carried out one week later, using same tool as the pre test. Collected data was then tabulated and analysed.

Plan for data analysis

Data analysis was done according to the objectives of the study. Both descriptive and inferential statistic were used.

- Analysis of the demographical data was done by frequency mean percentage.
- Paried 't' test was used to determine the difference between pre test and post test score in terms of effectiveness of self instructional module.
- Chi square test was used to determine the association between the selected demographic variables and pre test level of knowledge.

Production of Human Rights

Research proposal was approved by the dissertation committee of RASS Academy college of nursing poovanthi. Prior to the study, oral consent was obtained from the samples before starting data collection. Assurance was given to the sample that confidentiality would be maintained.

CHAPTER – IV

DATA ANALYSIS AND INTERPRETATION

Data analysis is conducted to reduce, organize and give meaning to the data. The results obtained from data analysis require interpretation to be meaningful. Interpretation of data involves examination of the results from data analysis, formation of conclusion, consideration of the implication for nursing exploration of signification of the findings and suggestion of further studies (polit and beck, 2016)

This chapter deals with the description of the samples, analysis and interpretation of the collected data. The data collected were tabulated, analyzed and presented based on objectives and hypothesis. It consist of the following sessions:

SECTION I: Description of samples based on IDRS (Indian diabetic risk score).

SECTION II: Description of samples according to their selected demographic variables.

SECTION III: Description of samples according to their pre-test and post-test level of knowledge

SECTION IV: Comparison of mean pre – test and mean post- test level of knowledge.

SECTION V: Association of pre – test level of knowledge with their selected demographic variables.

SECTION-I

Description of samples based on IDRS (Indian diabetic risk score)

Table 2: Distribution of at risk at non diabetics based on IDRS (Indian diabetic risk score)

(N=50)

Category	Range	Frequency	Percentage
Low risk	>30	0	0
Moderate risk	30-60	42	84%
High risk	<60	8	16%
TOTAL		**50**	**100%**

The data presented in the table reveals that distriburtion of samples based on the IDRS Score. With regards to IDRS, 84% of the people were at moderate risk of developing diabetes mellitus and 16% of people were at high risk of developing diabetes mellitus.
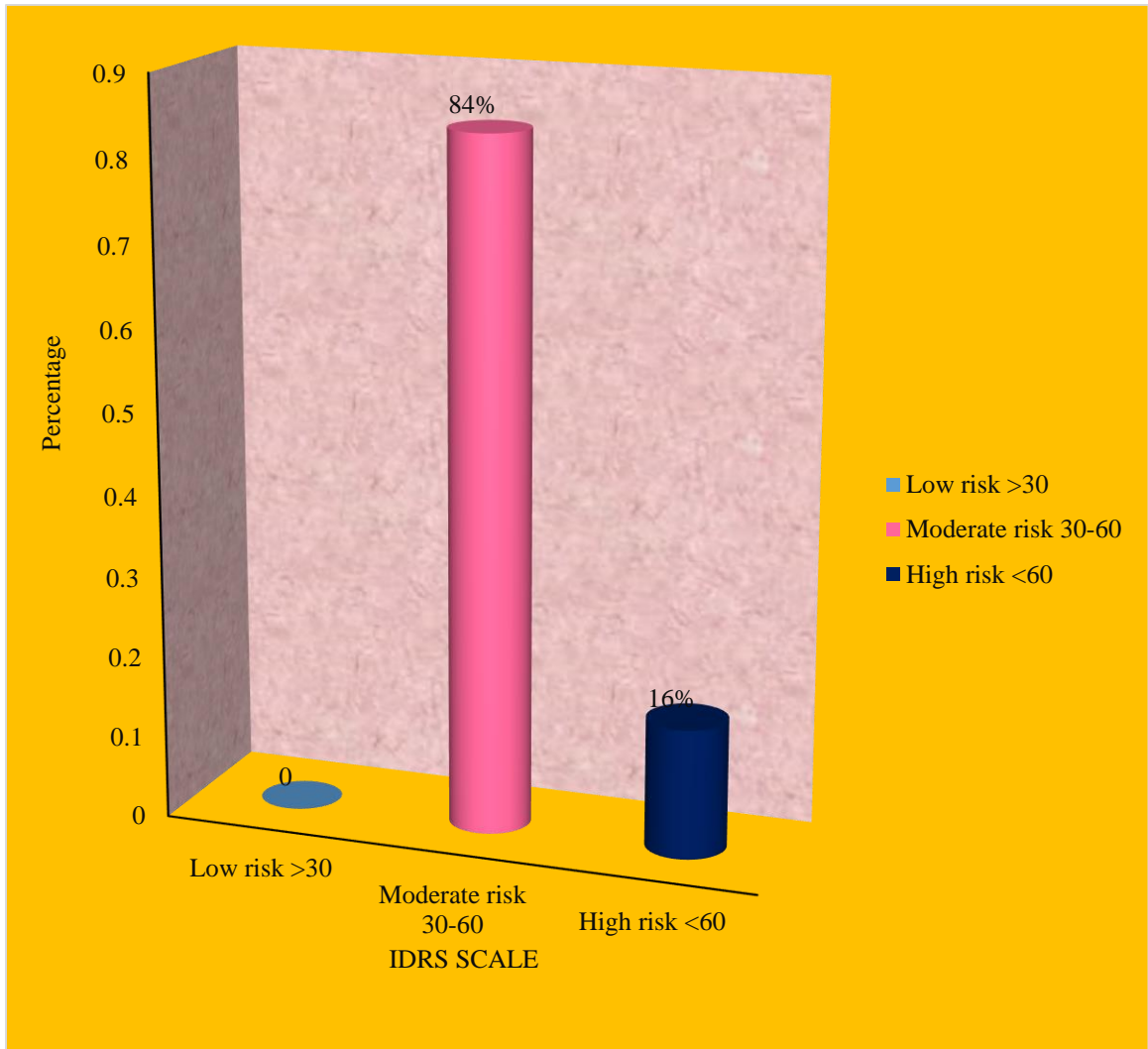
Figure 10: Distribution of sample according to their IDRS Scale

SECTION: II

Description of sample according to their demographic variables

Table 3: Description of sample according to their demographic profile

(N=50)

S.NO	DEMOGRAPHIC VARIABLES		FREQUENCY (f)	PERCENTAGE (f %)
1	Age (in years)	a) 20-40	27	54
		b) 41-60	18	36
		c) 61-80	5	10
2	Gender	a) Male	23	46
		b) Female	27	54
3	Religion	a) Hindu	34	68
		b) Muslim	13	6
		c) Christion	3	26
4	Occupation	a) Government job	5	10
		b) Private job	20	40
		c) Home maker	21	42
		d) Retired	4	8
5	Diet	a) Vegetarian	8	16
		b) Non vegetarian	42	84
6	Education	a) Illiterate	2	4
		b) Primary education	30	60
		c) Secondary education	10	20
		d) Graduate and above	8	16
7	Personal Habit	a) Smoking	8	16
		b) Alcoholism	1	2
		c) Smoking &alcoholism	10	20
		d) No such habits	31	62
8	Sources of Information	a) Friends and relatives	_	_
		b) Medical personal	1	2
		c) Mass media	12	24
		d) Others	37	74

Table 3: summarizes that demographic characteristics of pre diabetic people. Among 50samples, with regards to age 27(54%) were between 20 to 40 years of age, 18(36%) were between 41 to 60 years of age and 5 samples (10%) were between 61to 80 years of age. In case of sex, majority of the pre diabetic people 23(46%) were male and remaining 27(54%) were female. Finding related to religion, 34(68%) belongs to Hindu religion, 13(26%) belongs to Christianity and 3(6%) belongs to Muslim religion. Regarding occupation, 5(10%) were employed in government sector, 20(40%) were employed in private job, 21(42%) were home makers and 4(8%) were retired. With regards to food habit, 8(16%) were vegetarian and 42(84%) were non vegetarian. Regarding education, 2(4%) were illiterate, 30(60%) had primary education, 10 (20%) had secondary education, 8 (16%) were graduates. About personal habits, 8(16%) had habit of smoking, 1(2%) had habit of alcohol drinking, 10(20%) had habit of smoking & alcohol and 31(62%) had no such habits. Regarding sources of information about diabetes mellitus, 1(2%) gained knowledge through medical personal, 12(24%) from mass media and 37(74%)   from others.
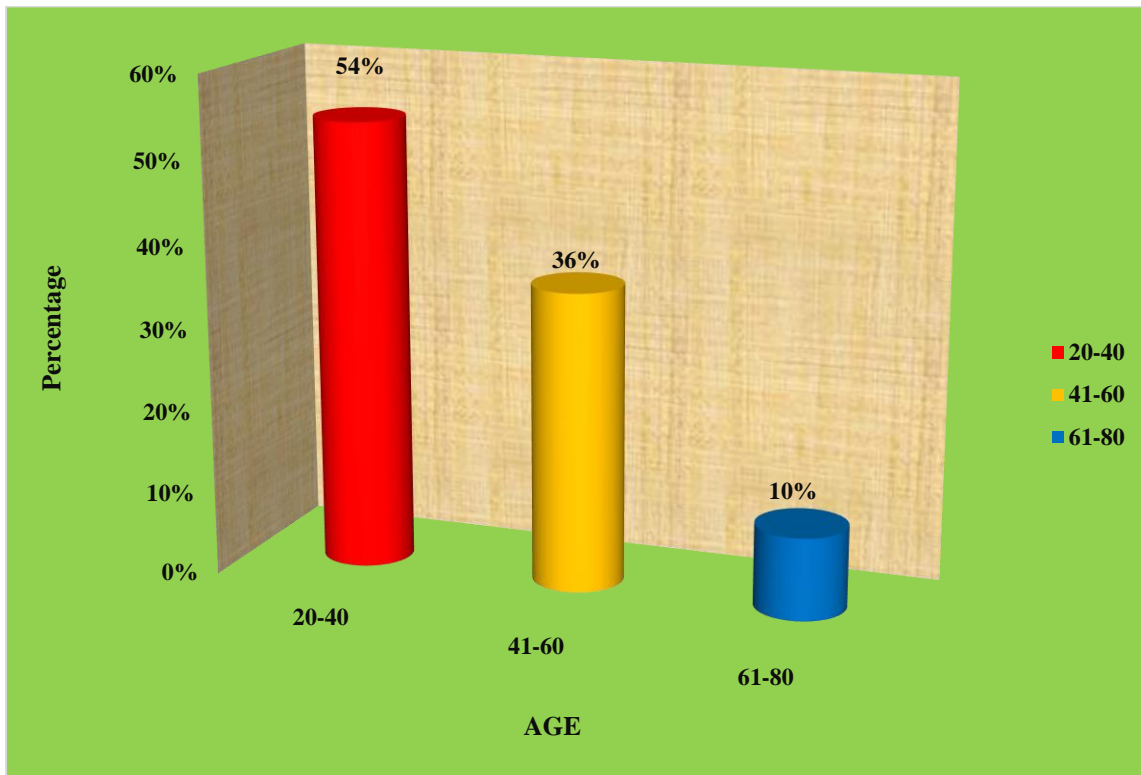
Figure 2: Distribution of samples according to their age
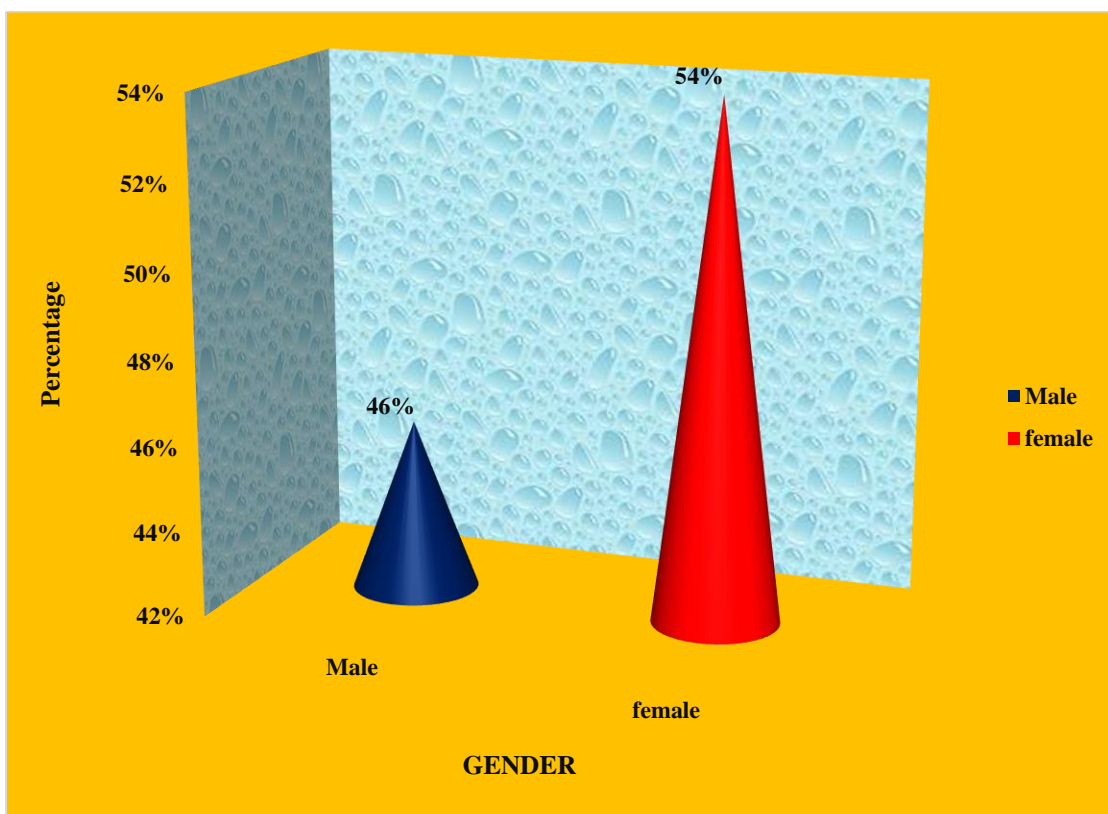
Figure 3: Distribution of samples according to their gender
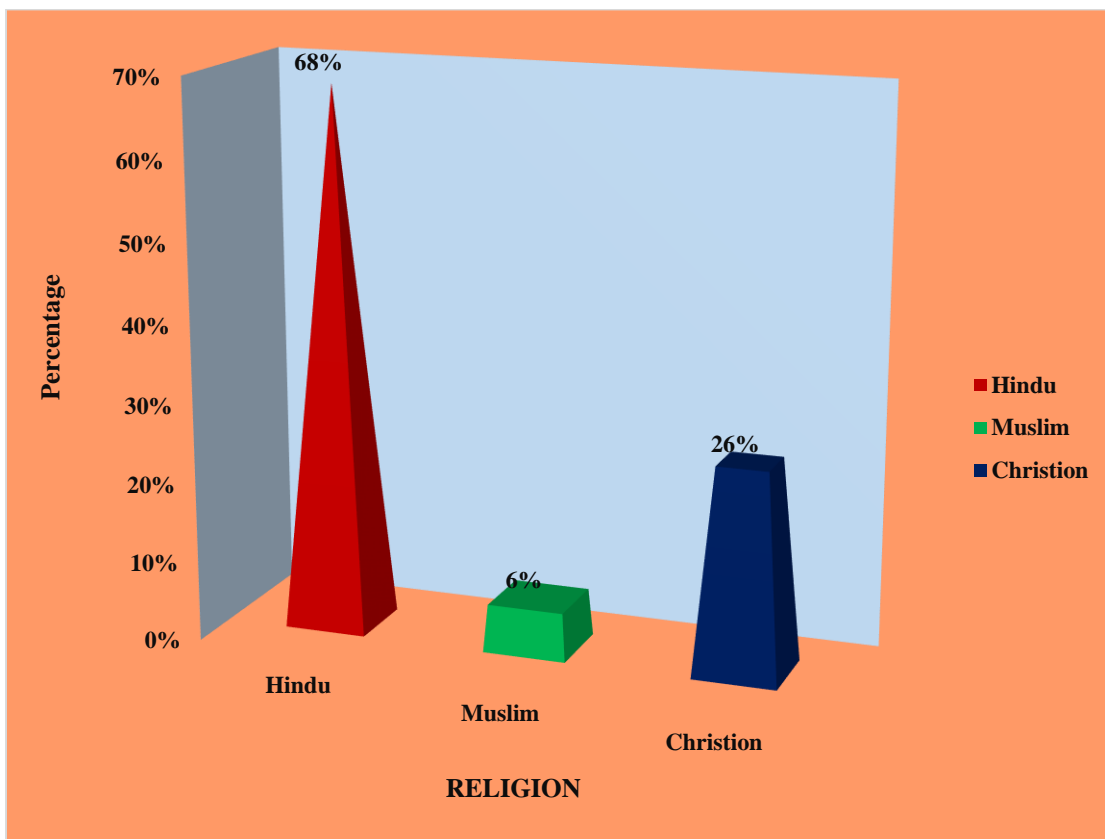
Figure 4: Distribution of samples according to their Religion
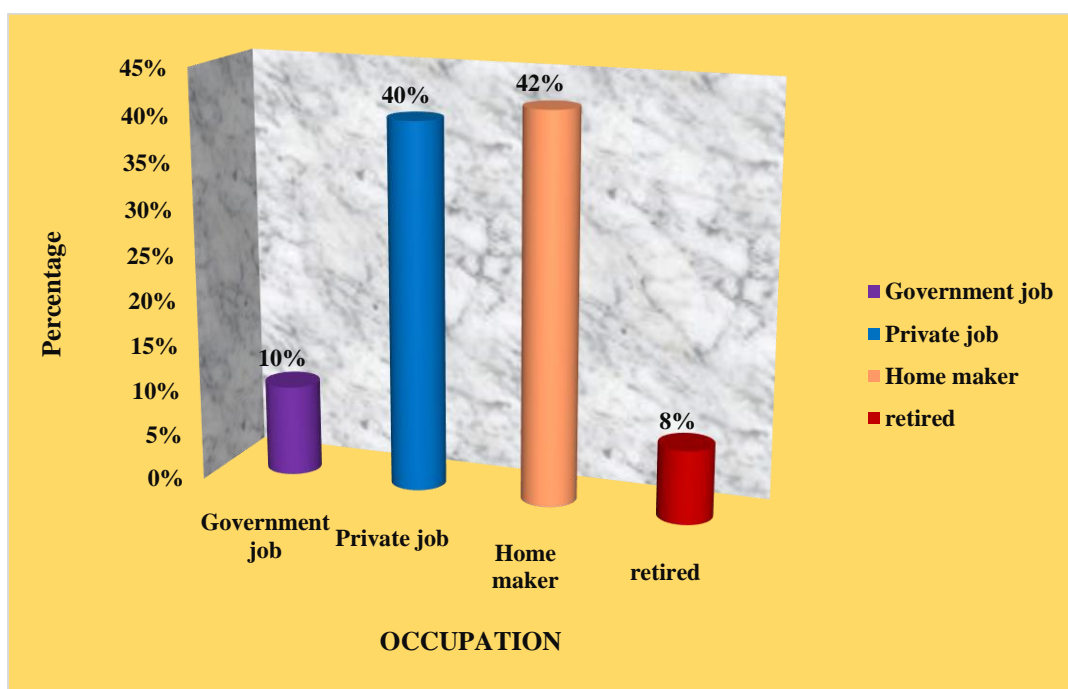
Figure 5: Distribution of samples according to their Occupation
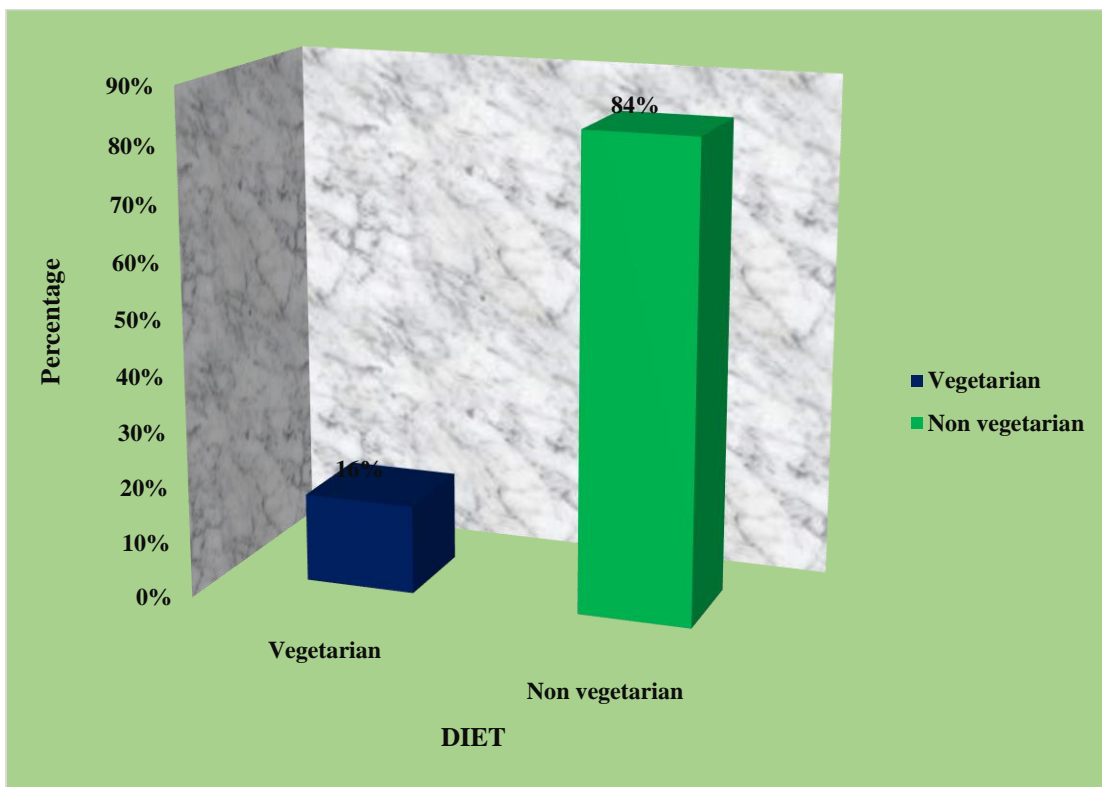
Figure 6: Distribution of sample according to their diet
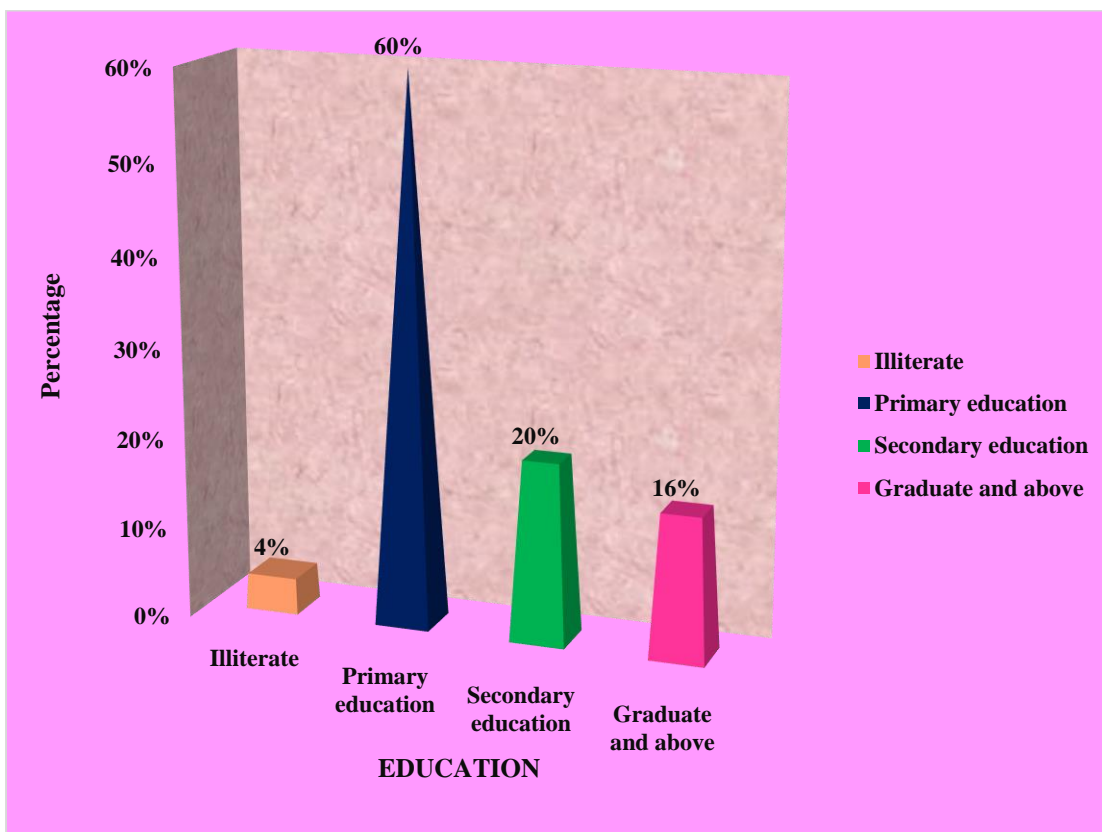
Figure 7: Distribution of sample for education
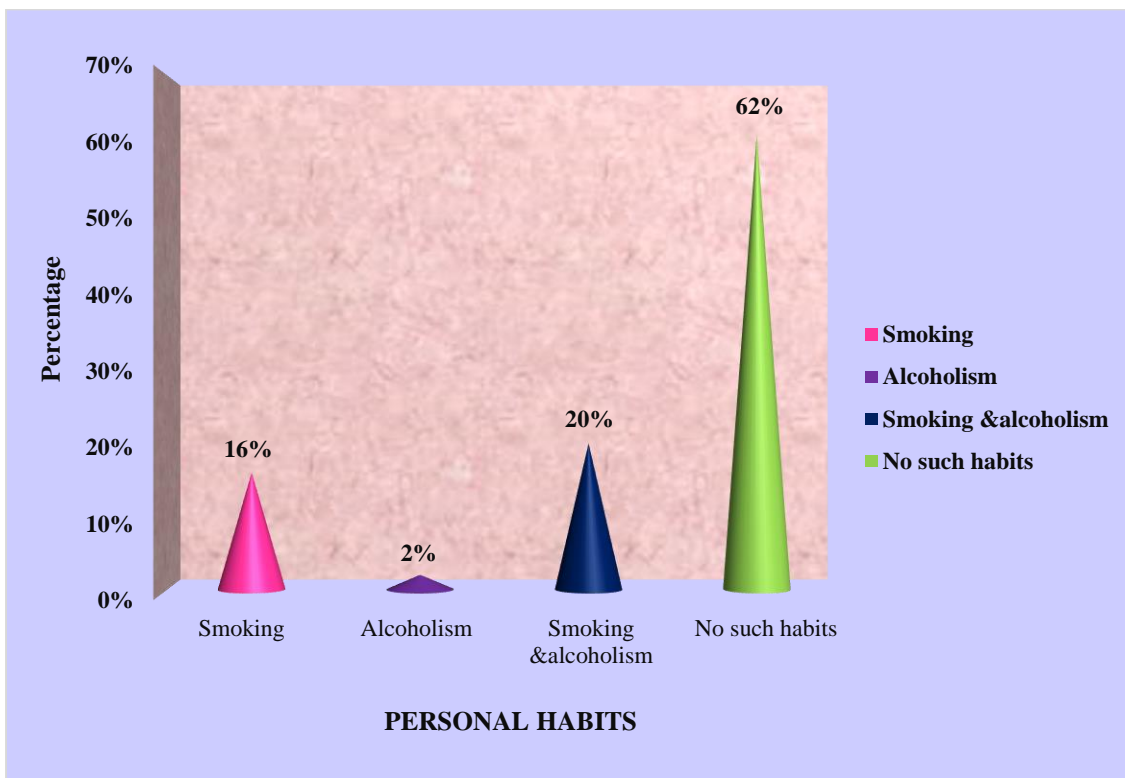
Figure 8: Distribution of samples according to their personal habits
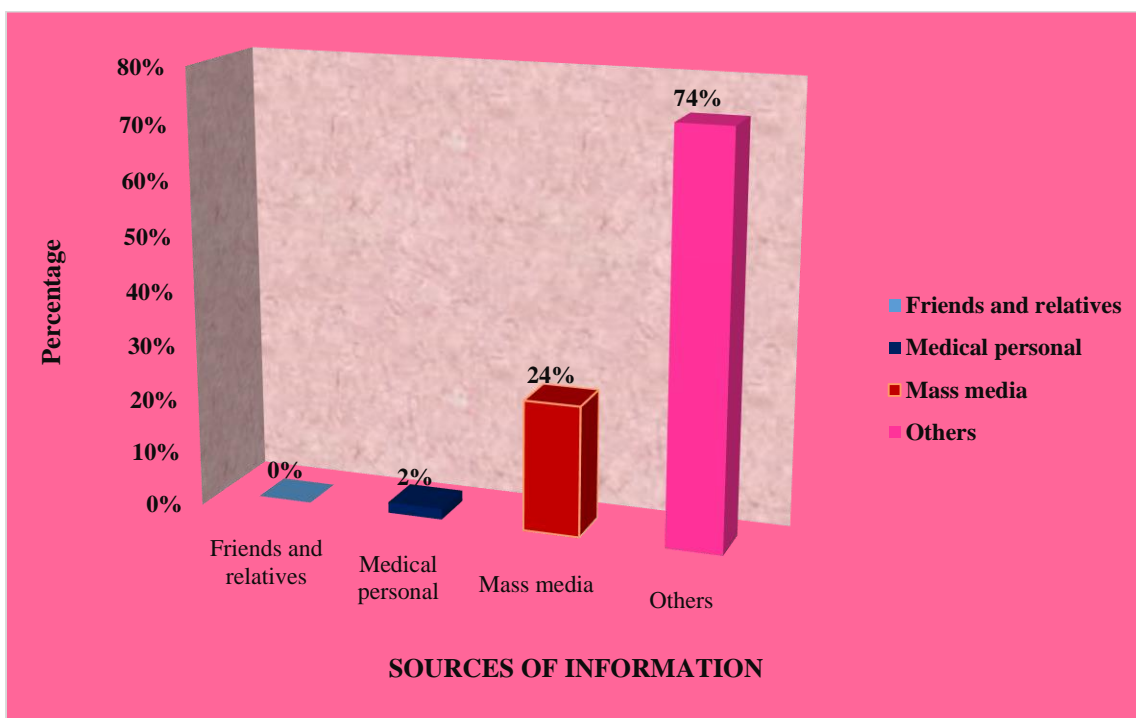
Figure 9: Distribution of samples according to their sources of Information

SECTION - III

Description of samples according to their pre-test post-test level of knowledge

Table-4: Description of samples according to their pre-test post-test level of knowledge

(N=50)

S.NO	Level of knowledge	Pre test			Post test		
		F	Mean	%	F	Mean	%
1	Adequate (Above 75%)	0	0	0%	34	28.2%	68%
2	Moderate (50%-75%)	2	20	4%	16	18.2%	32%
3	Inadequate (Below 50%)	48	5	96%	0	0	0%

The Table 4 Depicts the pre test and the post test level of knowledge of the prediabetes person. In the pre test, majority 48(96%) of the pre diabetic people had inadequate knowledge level and remaining 2(4%) had moderate level of knowledge. But in the post test, majority 34(68%) of the prediabetic people gained adequate knowledge (above 75%) and only 16 (32%) of them had moderate knowledge (50-75%) The above finding summarizes that, the self instructional module was significantly had beneficial effect in imparting the knowledge regarding prevention of diabetes among prediabetic people.
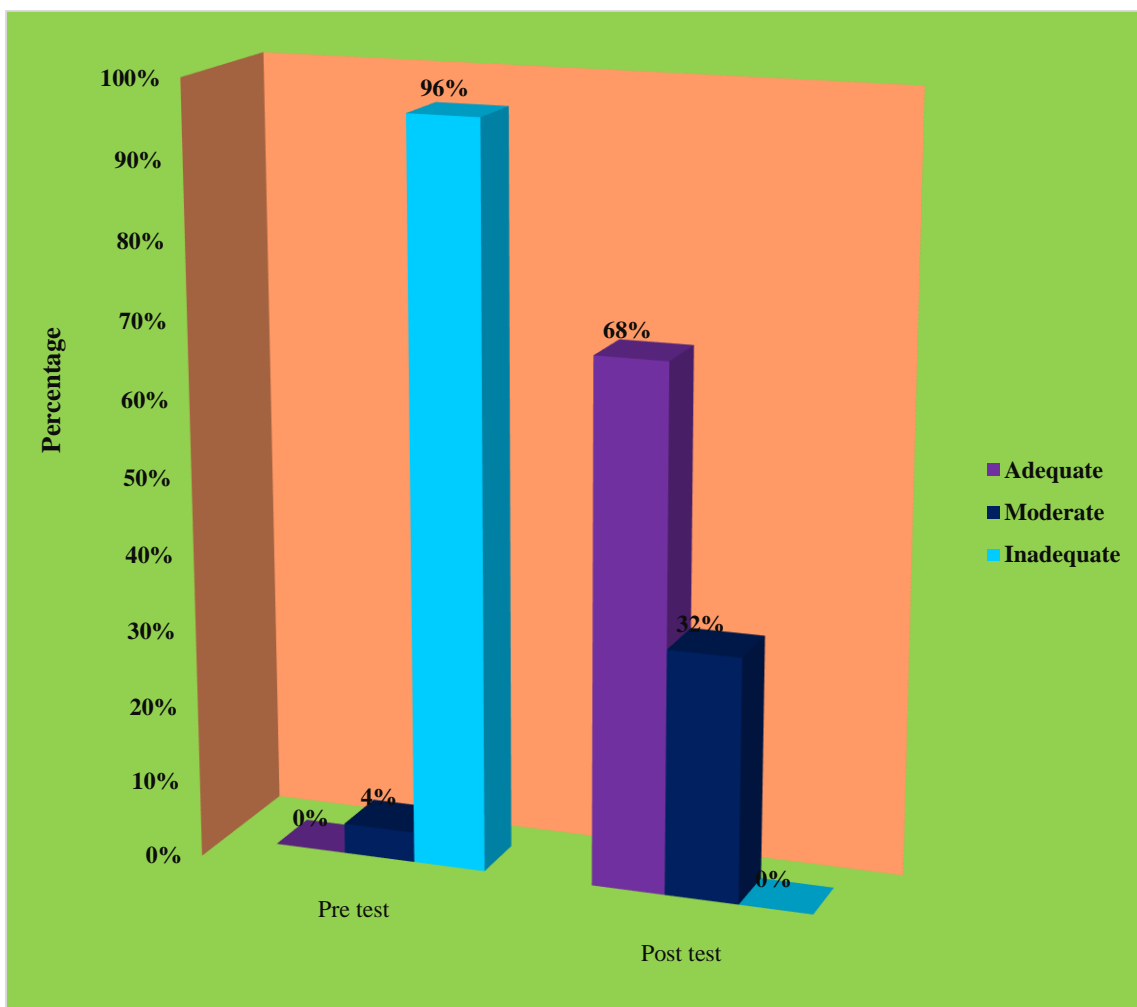
Figure 11: Distribution of samples according to their pre-test and post-test level of knowledge

SECTION - IV

Comparison of mean pre test and post test level of knowledge among the samples.

Table 5: Comparison of mean pre test and post test level of knowledge among the samples.

(N =50)

S.NO	LEVEL OF KNOWLEDGE	MEAN	MEAN DIFFERNCE (MD)	STANDARD DEVIATION (SD)	't' VALUE
1	PRE- TEST	5.64	19.36	5.18	26.52
2	POST- TEST	25.02			

Significant at 0.05 level

The above table depicts the comparison of mean pre test and post test knowledge level on prevention of diabetes mellitus among prediabetes people. The post test mean score (25.02) was high when compared to the pre test mean score (5.64) of knowledge. The obtained 't' value (26.52) was greater than table value at 0.05 level of significance, which shows that there was significant difference in the pre test and post test level of knowledge regarding prevention of diabetes mellitus among pre diabetic people. Hence the formulated **Research hypothesis (H1) was accepted.**
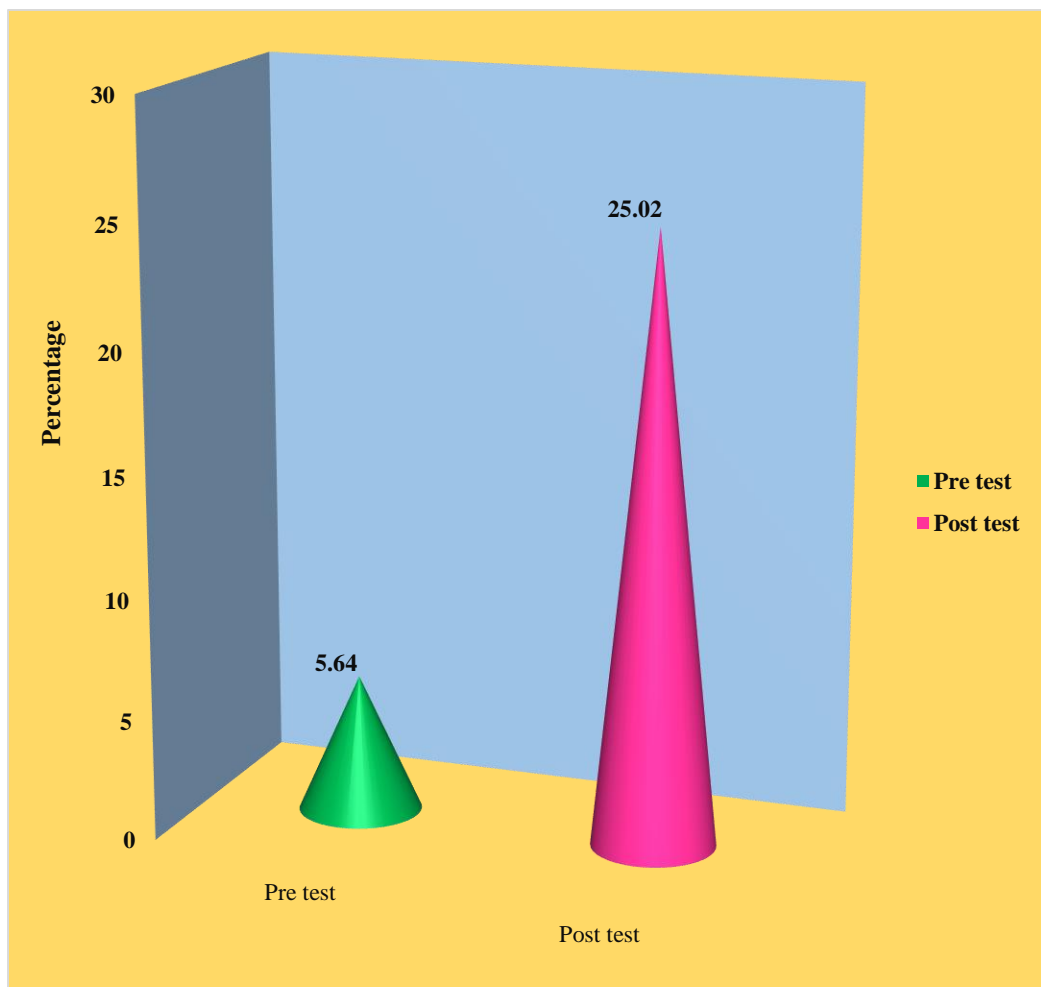
Figure 12: Comparison of mean pre- test and post-test level of knowledge among samples

SECTION – V

Association of pre-test level of knowledge and their selected demographic variables.

Table 6: Association of pre-test level of knowledge and their selected demographic variables.

(N=50)

S. No	Demographic variables	Level of knowledge			$x2$	Table value	Level of significance
		Adequate	Moderate	Inadequate			
1	Age in years						
	a) 20-40	0	2	25			
	b) 41-60	0	0	18	1.771	9.49	(NS)
	c) 61-80	0	0	5			
2	Gender						
	a) Male	0	1	22	0.013	5.99	(NS)
	b) Female	0	1	26			
3	Religion						
	a) Hindu	0	2	32			
	b) Christian	0	0	13	1.17	9.49	(NS)
	c) Muslim	0	0	3			
4	Occupation						
	a) Government	0	2	3			
	b) Private	0	0	20			
	c) Home maker	0	0	21	18.73	12.59	(S)
	d) Retried	0	0	4			
5	Diet						
	a) Veg	0	1	7	36.75	5.99	(S)
	b) Non-veg	0	1	4			

6	**Education**						
	a) Illiterate	0	0	2			
	b) Primary education	0	0	30	25.11	12.59	(S)
	c) Secondary education	0	0	10			
	d) Graduate	0	2	6			
7	**Personal habits**						
	a) Smoking	0	0	8			
	b) Alcoholism	0	0	1	1.29	12.59	(NS)
	c) Smoking & Alcoholism	0	0	10			
	d) No such habits	0	2	29			
8	**Source of information**						
	a) Friends	0	0	0			
	b) Medical Personnel	0	1	0	26.12	12.59	(S)
	c) Advertisement	0	1	11			
	d) Others	0	0	37			

Significant at 0.05 level

The above table depicts the association of pre diabetic people pre level of knowledge on prevention of diabetes mellitus with their selected demographic variable. With regards to occupation, the calculated value of chi-square (18.73) was more than table value. So occupation had a significant association with the pretest level of knowledge. Regarding diet, the calculated value of chi-square (36.75) was more than table value. So diet had a significant association with the pretest level of knowledge. With regards to education, the calculated value of chi-square (25.11) was more than table value. So education had a significant association with the pretest level of knowledge. Regarding to source of information, the calculated value of chi-square (26.12) was more than table value. So source of information had a significant association with the pretest level of knowledge.

With regards to age, gender, religion and personal habits, the calculated value of chi-square (18.73) was less than table value. So there was no association between age, gender, religion and personal habits with their pre test level of knowledge.

CHAPTER – V

DISCUSSION, SUMMARY, CONCLUSION, IMPLICATION AND RECOMMENDATION

Discussion

The present study was designed to assess the effectiveness of self instructional module on knowledge regarding prevention of diabetes mellitus among pre diabetic people in akilandapuram at sivagangai district. To find out the effectiveness of self instructional module, the investigator adapted pre-experimental one group pre-test test post-test design and 50 people pre diabetic people were selected through purposive sampling technique.

Demographic Variables

1. Among 50 samples, with regards to age 27(54%) were between 20 to 40 years of age, 18 (36%) were between 41 to 60 years of age and 5 samples (10%) were between 61to 80 years of age.

2. In case of sex, majority of the pre diabetic people 23(46%) were male and remaining 27(54%) were female.

3. Finding related to religion, 34(68%) belongs to Hindu religion, 13(26%) belongs to Christianity and 3(6%) belongs to Muslim religion.

4. Regarding occupation, 5(10%) were employed in government sector, 20(40%) were employed in private job, 21(42%) were home makers and 4(8%) were retired.

5. With regards to food habit, 8(16%) were vegetarian and 42(84%) were non vegetarian.

6. Regarding education, 2(4%) were illiterate, 30(60%) had primary education, 10(20%) had secondary education, 8(16%) were graduates.

7. About personal habits, 8(16%) had habit of smoking, 1(2%) had habit of alcohol drinking, 10(20%) had habit of smoking & alcohol and 31(62%) had no such habits. Regarding sources of information about diabetes mellitus, 1(2%) gained knowledge through medical personal, 12(24%) from mass media and 37(74%) from others.

8. With regards to IDRS, 84% of the people were at moderate risk of developing diabetes mellitus and 16% of people were at high risk of developing diabetes mellitus.

The first objective was to assess the pre test level of knowledge regarding prevention of diabetes mellitus among pre diabetes

In this study, pre diabetic people pre test level of knowledge of diabetes was assessed through the structured questionnaire. In the pre test, majority 48(96%) of the pre diabetic people had inadequate knowledge level and remaining 2(4%) had moderate level of knowledge. No one had adequate knowledge in the pre test.

The above study supports **Kurian.B. et.al., (2014)** has done a cross sectional study to assess the knowledge of diabete mellitus among 343 adults in a rural panchayat of district of ernakkulam of kerala.The samples were interviewed based on 23 items in four domains such as general awareness ,risk factors ,complication and life style modification.The mean knowledge score was 15.6.The result showed that majority had lack of knowledge regarding diabetes, hence the researcher concluded that educating the community on the risk factors is the key strategy for the prevention of diabetes and delaying the onset of diabetes among high risk individuals.

The second objective was to evaluate the effectiveness of self instructional module on knowledge regarding prevention of diabetes mellitus among the prediabetes.

The present study After the self instructional module , majority 34(68%) of the prediabetic people gained adequate knowledge (above 75%) and only 16 (32%) of them had moderate knowledge (50-75%) in the post test. Moreover the post test mean score (25.02) was high when compared to the pre test mean score(5.64) of knowledge. The obtained 't' value (26.52) was greater than table value at 0.05 level of significance, which shows that there was significant difference in the pre test and post test level of knowledge regarding prevention of diabetes mellitus among pre diabetic people. The above finding summarizes that, the self instructional module was significantly had beneficial effect in imparting the knowledge regarding prevention

of diabetes among prediabetic people. Hence the formulated **Research hypothesis (H1) was accepted**

The above study supports **Wiliam et.al., (2013)** was conducted the study effectiveness of knowledge attitude practice of diabetes mellitus using self instructural module for prevent the diabetes mellitus. There are 2000 people participate in selected study include 4 district. The study was conducted in community urban area using questionnaire designed the researcher. The result of the study were more than female male (41.9%) in female (58.1%) The study was concluded that Diabetes education with widely improvement in knowledge, practice of prevent diabetes mellitus.

The third objective was to find out the association between the pre test level of knowledge of pre diabetes with their selected demographic variables.

The present study reveals that there was a significant association between the pre test score with their selected demographic variables such as occupation, diet, education and source of information. The computed chi-square values of the four above said variables were high when compared to table value. With regards to age, sex, religion, and personal habits their was no association with knowledge score. Hence the formulated **Research hypothesis (H2) was accepted**

The above study supports **Islam FM et.al., (2014)** has done a study to determine the prevalence and risk factors of prediabetes (diagnosed and undiagnosed) and their association with knowledge of diabetes among 3104 adults more than 30years in rural Bangladesh.The basic parameters ,their knowledge, attitude and practice were recorded. Overall knowledge was poor with 13.4%.They concluded that low socio economic status peoples and illiterates were associated with the high risk of developing diabetes. Moreover public health programme should be targeted on low socioeconomic status and aim to increase the knowledge of Diabetes

Summary of the Study

The study was undertaken to evaluate the effectiveness of self instructional module on knowledge regarding the prevention of diabetes mellitus among pre diabetes in Akilandapuram at sivagangai district. The conceptual frame work of the study was general system theory by ludwinbertalanfy (1968) An evaluator approach

used to conduct the study. The research design adopted for the the present study was prior to data collection, screening done using IDRS scale and FBS was taken to find the eligibility of the sample. Non probability purposive sampling technique was used for selection of sample. The data was collected for the period of 4 weeks from the pre diabetes people in 26th ward Akilandapuram at sivagangai. The investigator rendered self instructional module on prevention of diabetes mellitus.The post test was conducted after one week with semi structured questionnaire based on the objectives and hypotheses,The data were analysed using both descriptive and inferential statistics.

The Objectives of the study were,

➢ To assess the pre test level of knowledge regarding prevention of diabetes mellitus among pre diabetes.

➢ To evaluate the effectiveness of self instructional module on knowledge regarding prevention of diabetes mellitus among prediabetes.

➢ To find out the association between the pre test level of knowledge of pre diabetes with their selected demographic variables.

The Hypothesis of the study were,

❖ **H1:** There is a significant difference between pretest and post test level of knowledge scores regarding prevention of diabetes mellitus of pre diabetes

❖ **H2**: There is significant association between pretest level of knowledge and baseline data of prediabetes.

Major findings of the study

1. Among 50 samples, with regards to age 27(54%) were between 20 to 40 years of age,18(36%) were between 41 to 60 years of age and 5 samples (10%)were between 61to 80 years of age.

2. In case of sex, majority of the pre diabetic people 23(46%) were male and remaining 27(54%) were female.

3. Finding related to religion, 34(68%) belongs to Hindu religion, 13(26%) belongs to Christianity and 3(6%) belongs to Muslim religion.

4. Regarding occupation, 5(10%) were employed in government sector, 20(40%) were employed in private job, 21(42%) were home makers and 4(8%) were retired.

5. With regards to food habit, 8(16%) were vegetarian and 42(84%) were non vegetarian.

6. Regarding education, 2(4%) were illiterate, 30(60%) had primary education, 10(20%) had secondary education, 8(16%) were graduates.

7. About personal habits, 8(16%) had habit of smoking, 1(2%) had habit of alcohol drinking, 10(20%) had habit of smoking & alcohol and 31(62%) had no such habits. Regarding sources of information about diabetes mellitus, 1(2%) gained knowledge through medical personal, 12(24%) from mass media and 37(74%)   from others.

8. With regards to IDRS, 84% of the people were at moderate risk of developing diabetes mellitus and 16% of people were at high risk of developing diabetes mellitus.

9. In the pre test, majority 48(96%) of the pre diabetic people had inadequate knowledge level and remaining 2(4%) had moderate level of knowledge.

10. In the post test, majority 34(68%) of the prediabetic people gained adequate knowledge (above 75%) and only 16 (32%) of them had moderate knowledge (50-75%) The above finding summarizes that, the self instructional module was significantly had beneficial effect in imparting the knowledge regarding prevention of diabetes among prediabetic people.

11. The post test mean score (25.02) was high when compared to the pre test mean score (5.64) of knowledge. The obtained 't' value (26.52) was greater than table value at 0.05 level of significance, which shows that there was significant difference in the pre test and post test level of knowledge regarding prevention of diabetes mellitus among pre diabetic people. Hence the formulated **Research hypothesis (H1) was accepted**

12. There was a significant association between the pre test score with their selected demographic variables such as occupation, diet, education and source of information. The computed chi-square values of the four above said

variables were high when compared to table value. With regards to age, sex, religion, and personal habits their was no association with knowledge score. Hence the formulated **Research hypothesis (H2) was accepted**

Conclusion

Diabetes is one of the major threats to the health of adult population in india. In 1997 WHO report has shown that there was a marked increase in the number of people affected with diabetes and this trend was scheduled to grow in geometric proportion in the next couple of decade. In order to reduce the incidence and the impact of diabetes mellitus, its necessary to create awareness among the feable population at risk . The present study concluded that self instructional module was found to be effective in improving the knowledge regarding prevention of diabetes mellitus among at risk non diabetics.

Implication

Nurse can use the self instructional module as a best teaching method for impacting the knowledge in the field of health. The study findings have several implications in the field of nursing service, nursing education, nursing administration and nursing research.

Nursing service

➢ Awareness regarding prevention of diabetes mellitus should be well emphasized among nursing professionals as they are having continuous contact with the patient.

➢ Nurse educators can teach their collegues and students through in service education and other activities regarding the importance of preventing diabetes mellitus.

➢ Nurse working in the community area can plan teaching programmes on diabetes mellitus and can give more emphasis on prevention of diabetes mellitus through role play and other modes of interventions.

Nursing education

➢ Prepare student nurse with adequate knowledge regarding prevention of diabetes mellitus as they can utilize the knowledge in giving health education among hospitalized patient and in the community settings

➢ The nursing curriculum always focuses on disease conditions and its management and not on prevention aspect. Nurse educators should join their hands with the nursing service and nursing administration to make changes.

Nursing research

➢ There is a need for extensive and intensive research in this are so that strategies for educating nurses regarding various aspects of prevention of diabetes mellitus can be promoted.

➢ Nurse investigators should make effort to conduct interactive sessions with hospitalized patients regarding various aspects of diabetes mellitus.

➢ Investigators can use the methodology as reference material; it provides a venue for further studies in this area.

Nursing administration

➢ The study findings can be used by nursing authorities to organize inservice education and orientation programmes in community health centers to update the knowledge regarding prevention of diabetes mellitus

➢ Nurse administrators can make plans for awareness programs ensuring the prevention of diabetes mellitus among community people

➢ Disribution of guidelines among community people regarding prevention of diabetes mellitus should be encouraged

➢ Nurse administrators can train and supervise the local health workers regarding prevention of diabetes mellitus in community settings.

Recommendations

✓ Similar study can be replicated with a large sample in order to generalize the study findings

✓ Similar study can be conducted with different teaching strategies.

✓ Similar study can be carried out among other population and health professionals.

✓ Similar study can be conducted by including the assessment of practice of preventive measures of diabetes mellitus.

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APPENDIX – I

RESEARCH TOOL

SECTION - AIDRS (Indian diabetic risk score)

IDRS was developed using four simple parameters namely age, abdominal obesity, family history of diabetes, and physical activity. A maximum score of 100 is given for these categories combined as shown the figure.it has shown to be highly cost effective way of testing for diabetes in a resource poor setting like India, IDRS also helps to detinguish type 2 from non-type 2 diabetes mellitus.

S.No	Categorized risk factors	Score
1	**Age**	
	➢ <35 years	0
	➢ 35-49 years	20
	➢ >50	30
2	**Waist circumference**	
	➢ Waist<80cm (female),<90cm(male)	0
	➢ Waist >80-89cm(female),>90-99cm(male)	10
	➢ Waist >90cm(female),>100cm(male)	20
3	**Physical activity**	
	➢ Regular vigorous exercise or sternuous (manual)activites athome/work	0
	➢ Regular moderate exercise or moderate physical activity at home/work	10
	➢ Regular mild exercise or mild physical activity at home /work	20
	➢ No exercise and /or sedentary activities at home /work	30
4	**Family history of diabetes**	
	➢ No diabetes in parents	0
	➢ One parent is diabetic	10
	➢ Both parent are diabetic	20

Scoring Procedure:

Above 60   High risk

60 to 30   Moderate risk

Below 30   Low risk.

SECTION - B: DEMOGRAPHIC DATA

Self- administered structured knowledge questionnaire on prevention of diabetes mellitus among Pre diabetes

Dear participants,

You are requested to read the questions carefully and encircle the correct response.

Sample No:

1. **Age in numbers**
   a) 20-40 years   [   ]
   b) 41-60 years   [   ]
   c) 61-80 years   [   ]

2. **Gender**
   a) Male   [   ]
   b) Female   [   ]

3. **Religion**
   a) Hindu   [   ]
   b) Muslim   [   ]
   c) Chiristian   [   ]

4. **Occupation**
   a) Government job   [   ]
   b) Private job   [   ]
   c) Homemaker   [   ]
   d) Retired   [   ]

5. **Diet**
   a) Vegetarian   [   ]
   b) Non –vegetarian   [   ]

6. **Education**
   a) Illiterate   [   ]
   b) Primary education   [   ]
   c) Secondary education   [   ]
   d) Graduate and above   [   ]

7. Personal habits

    a) Smoking   [   ]

    b) Alcoholism   [   ]

    c) Smoking &alcoholism   [   ]

    d) No such habits   [   ]

8. What is the source of information regarding diabetes mellitus?

    a) Friends and relatives   [   ]

    b) Health personals   [   ]

    c) Mass media   [   ]

    d) Others   [   ]

**PART-I: STRUCTURED KNOWLEDGE QUESTIONNARIE RELATED TO
ANATOMY & PHYSIOLOGY OF PANCREAS.**

Dear participants,

You are requested to read the questions carefully and encircle the correct response.

1) Where the pancreas is situated in our body?

    a) Cervical area   [   ]

    b) Lower abdomen   [   ]

    c) Behind the stomach

    d) Anterior abdomen

2) Which organ is producing insulin in our body?

    a) Pancreas   [   ]

    b) Kidney   [   ]

    c) Liver   [   ]

    d) Produced by spleen   [   ]

3) Normal length of pancreas

    a) 9 -11cm   [   ]

    b) 12-15cm   [   ]

    c) 15-16cm   [   ]

    d) 16-17cm   [   ]

4) Normal weight of pancreas

    a) 50 gram   [   ]

    b) 55 gram   [   ]

    c) 60 gram   [   ]

    d) 65 gram   [   ]

5) What is the main function of pancreas?

    a) Production of urine   [   ]

    b) Maintain blood pH   [   ]

    c) Regulate the blood pressure   [   ]

    d) Regulate blood sugar   [   ]

PART-2:

GENERAL INFORMATION REGARDING DIABETES MELLITUS:

6) What is mean by diabetes mellitus

    a) In adequate production of insulin   [   ]

    b) Filtration of waste product   [   ]

    c) Production of blood   [   ]

    d) Diagestion of food   [   ]

7) How many types of diabetes mellitus

    a) 1   [   ]

    b) 2   [   ]

    c) 3   [   ]

    d) 5   [   ]

8) What is the cause of diabetes?

    a) Over weight   [   ]

    b) Sedentary life style   [   ]

    c) Family history   [   ]

    d) All the above   [   ]

9) Which is the common symptoms of diabetes mellitus

    a) Increased urination   [   ]

    b) Head ache   [   ]

    c) Cough   [   ]

    d) Puffiness of face   [   ]

10) How to measure the blood sugar level

    a) Thermometer   [   ]

    b) Ultra sound   [   ]

    c) Glucometer   [   ]

    d) Sphygmomanometer   [   ]

11) What is the normal range of fasting blood sugar level

    a) 70-100mg/dl   [   ]

    b) 100-120mg/dl   [   ]

    c) 120-140mg/dl   [   ]

    d) 120-160mg/dl   [   ]

12) Who are all the risk group for diabetes mellitus

    a) Sedentary life style worker   [   ]

    b) Heavy worker   [   ]

    c) Moderate worker   [   ]

    d) None of the above   [   ]

PART - III

QUESTIONS RELATED TO PREVENTIVE MEASURES FOR DIABETES MELLITUS AMONG PRE DIABETES.

13) How long do you have to exercise?

    a) 20 mts   [   ]

    b) 30 mts   [   ]

    c) 1 hr   [   ]

    d) 2 hr   [   ]

14) What is the main benefit for exercise

    a) Blood sugar level controlled   [   ]

    b) Sources of energy   [   ]

    c) Refresh brain function   [   ]

    d) Increase immune power   [   ]

15) Which one is except during exercise?

    a) Don't do exercise daily   [   ]

    b) Don't do after diet   [   ]

    c) Do heavy exercise   [   ]

    d) Do exercise in after surgery   [   ]

16) What happens when we consume carbohydrate diet?

    a) Kidney disease   [   ]

    b) Obesity   [   ]

    c) Brain damage   [   ]

    d) Stroke   [   ]

17) Which one is fiber complex carbohydrate contain food

    a) Parley   [   ]

    b) White bread   [   ]

    c) Cerealss   [   ]

    d) Meat   [   ]

18) What kind of fatty food is to be taken in diet?

    a) Omega-3   [   ]

    b) Egg yolk   [   ]

    c) Meat   [   ]

    d) Coconuts   [   ]

19) What is the main function of protein

    a) while protein is converted to glucose which gives energy   [   ]

         to our body

    b) Restore the calcium level   [   ]

    c) Damage tissue   [   ]

    d) Produce hormone   [   ]

20) Which one of the followings are protein rich diet?

    a) Cereals   [   ]

    b) palm oil   [   ]

    c) butter   [   ]

    d) coconut oil   [   ]

21) Which is important role in lowering and maintain the body, s glucose content.

    a) Vitamin-E, magnesium, chromium.   [   ]

    b) Vitamin-B,Vitamin B12   [   ]

    c) Vitamin-A,Vitamin   [   ]

    d) Vitamin-B1   [   ]

22) Which one is vitamin c rich food

    a) Apple   [   ]

    b) Amla   [   ]

    c) Grapes   [   ]

    d) Mango   [   ]

23) How to control over weight

    a) Meditation   [   ]

    b) Sleeping   [   ]

    c) Exercise   [   ]

    d) Eatings   [   ]

24) How to reduce the stress

    a) Speaking,dancing   [   ]

    b) Working,   [   ]

    c) Thinking   [   ]

    d) Prayer, medidation   [   ]

25) How to prevent a person from the risk of -diabetes

    a) Quit smoking &alcohol   [   ]

    b) Increased smoking   [   ]

    c) Increased alcohol   [   ]

    d) Tobacco intakes   [   ]

26) What is the purpose of doing screening for diabetes?

    a) Prevent fat   [   ]

    b) prevent diabetes   [   ]

    c) prevent renal failure   [   ]

    d) prevent heart disease   [   ]

27) Why? The use of hba1c in diabetes mellitus

    a) Identify vitamin level   [   ]

    b) Identify fat level   [   ]

    c) Identify plasma glucose concentration   [   ]

    d) Identify haemoglobin levels   [   ]

28) Which is the greater developing diabetes in range of hba1c

    a) Below-5.6%   [   ]

    b) 5.6%-7.0%   [   ]

    c) 7.1-8.0%   [   ]

    d) above 8%   [   ]

29) Which one is the complication of diabetes mellitus

    a) Foot damage   [   ]

    b) Bleeding   [   ]

    c) Weakness   [   ]

    d) Obesity   [   ]

30) Which one is the standard weight status categories?

    a) GTT   [   ]

    b) BMI   [   ]

    c) ORS   [   ]

    d) DVT   [   ]

ANSWER KEY

Answer key and score for the knowledge questionnaire to assess the knowledge regarding prevention of diabetes mellitus.

SL.NO	ANSWER KEY	SCORE
1	b	1
2	a	1
3	b	1
4	c	1
5	d	1
6	a	1
7	b	1
8	d	1
9	a	1
10	c	1
11	a	1
12	a	1
13	a	1
14	a	1
15	b	1
16	b	1
17	a	1
18	a	1
19	a	1
20	a	1
21	a	1
22	b	1
23	c	1
24	d	1
25	a	1
26	b	1
27	c	1
28	d	1
29	d	1
30	b	1

நீரிழிவு நோய் வராமல் தடுப்பதற்கான விழிப்புணர்வு மதிப்பீட்டு படிவம் பங்களிப்பவர்களின் கவனத்திற்கு:-

கீழ்கண்டவாறு வினாக்களை கவனமாக வாசித்து தகுந்த விடைகளை வட்டமிட்டு காட்டவும் தாங்கள் அளிக்கும் விபரங்கள் அனைத்தும் எனது கல்வி மற்றும் தங்களுக்கு நீரிழிவு நோய் வராமல் தடுப்பதற்கான விழிப்புணர்வை ஏற்படுத்த மட்டும் பயன்படுத்தபடும் என்பதை இதன் மூலம் தெரிவித்துக் கொள்கின்றேன்

தனிநபர் மதிப்பீட்டு படிவம்

மாதிரி படிவ எண்

பகுதி -1 : சுயவிபரப்பட்டியல்

1. வயது (ஆண்டுகளில்)

   அ) 20 முதல் 40 வரை   [   ]

   ஆ) 41 முதல் 60 வரை   [   ]

   இ) 61 முதல் 80 வரை   [   ]

2. பாலினம்

   அ) ஆண்   [   ]

   ஆ) பெண்   [   ]

3. மதம்

   அ) இந்து   [   ]

   ஆ)முஸ்லீம்   [   ]

   இ)கிறிஸ்டியன்   [   ]

4. வேலையைப் பற்றிய தகவல்

   அ) அரசு வேலை   [   ]

   ஆ) தனியார்வேலை   [   ]

   இ) இல்லதரசி   [   ]

   ஈ) ஓய்வு பெற்றவர்   [   ]

5. உணவு முறைகள்:-

   அ) சைவ உணவு உட்கொள்பவர்   [   ]

   ஆ) அசைவ உணவு உட்கொள்பவர்   [   ]

6. கல்வி தகுதி:

   அ) படிக்காதவர்   [   ]

   ஆ) 1 ஆம் வகுப்பு முதல் 8 ஆம் வகுப்பு வரை

   இ) 9 ஆம் வகுப்பு முதல் 12 ஆம் வகுப்பு வரை   [   ]

   ஈ) பட்டதாரி   [   ]

7. தனிப்பட்ட பழக்கவழக்கங்கள்

    அ) புகைபித்தல்   [   ]

    ஆ) மது அருந்துதல்   [   ]

    இ) மதுஅருந்துதல் மற்றும் புகைபிடித்தல்   [   ]

    ஈ) எந்த தீய பழக்கங்களும் இல்லை   [   ]

8. நீரிழிவு நோய் பற்றி இதற்கு முன் யாரிடமிருந்து தெரிந்து கொண்டீர்கள்

    அ) நண்பர்கள் மற்றும் உறவினர்கள்   [   ]

    ஆ) மருத்துவ துறை சார்ந்தவர்களிடம்   [   ]

    இ) விளம்பர சாதனங்கள்   [   ]

    ஈ) மற்றவை   [   ]

பகுதி – 1 (அ):

நமது உடலில் உள்ள கணையத்தின் அமைப்பு மற்றும் செயல்பாடுகள் பற்றி வினாக்கள்:-

1. நமது உடலில் கணையம் எங்கே அமைந்துள்ளது

    அ) கழுத்துப்பகுதியில்   [   ]

    ஆ) வயிற்றின் கீழ்ப்பகுதியில்   [   ]

    இ) வயிற்றுப்பகுதிக்கு பின்னால்   [   ]

    ஈ) பின் பக்க வயிற்றில்   [   ]

2. நமது உடலில் எந்த உறுப்பு இன்சுலினை உற்பத்தி செய்கிறது

    அ) கணையம்   [   ]

    ஆ) சிறுநீரகம்   [   ]

    இ) கல்லீரல்   [   ]

    ஈ) மண்ணீரல்   [   ]

3. கணையத்தின நீளம்

    அ) 9 முதல் 11 சென்டி மீட்டர்   [   ]

    ஆ) 12 முதல் 15 சென்டி மீட்டர்   [   ]

    இ) 15 முதல் 16 சென்டி மீட்டர்   [   ]

    ஈ) 16 முதல் 17 சென்டி மீட்டர்   [   ]

4. கணையத்தின் சராசரி எடை

    அ) 50 கிராம்   [   ]

    ஆ) 55 கிராம்   [   ]

    இ) 60 கிராம்   [   ]

    ஈ) 65 கிராம்   [   ]

5. கணையத்தின் முக்கிய வேலை என்ன?

அ) சிறுநீரை உற்பத்தி செய்கிறது [   ]

ஆ) இரத்தத்தில் அமில காரத்தை பராமரிக்கும் [   ]

இ) இரத்த அழுத்தத்தை கட்டுப்படுத்தும் [   ]

ஈ) இரத்த சர்க்கரையின் அளவை கட்டுப்படுத்தும்

பகுதி-1 (ஆ)

நீரிழிவு நோய் பற்றிய பொதுவான தகவல்கள்:-

6. நீரிழிவு நோய் என்றால் என்ன?

அ) இரத்தத்தில் இன்சுலின் அளவு குறைவாக சுரக்கப்படுவது [   ]

ஆ) கழிவு பொருட்களை வடிகட்டுவது [   ]

இ) இரத்தத்தை உற்பத்தி செய்வது [   ]

ஈ) உணவு செரிமானமாவது [   ]

7. நீரிழிவு நோய் எத்தனை வகைப்படும்

அ) ஒன்று [   ]

ஆ) இரண்டு [   ]

இ) மூன்று [   ]

ஈ) ஐந்து [   ]

8. நீரிழிவு நோய் வருவதற்கான காரணங்கள்

அ) உடல் பருமன் [   ]

ஆ) உடல் உழைப்பு இல்லாதவர் [   ]

இ) பரம்பரையாக நீரிழிவு நோய் உள்ளவர்கள் [   ]

ஈ) இவை அனைத்தும் [   ]

9. நீரிழிவு நோய்க்கான அறிகுறிகள்

அ) அதிகமான அளவு சிறு நீர் கழித்தல் [   ]

ஆ) தலைவலி [   ]

இ) இருமல் [   ]

ஈ) முகம் வீங்குதல் [   ]

10. இரத்த சர்க்கரையின் அளவை எவ்வாறு கண்டறியலாம்

அ) தெர்மோ மீட்டர் [   ]

ஆ) அல்ட்ராசவுண்ட் [   ]

இ) க்ளுகோ மீட்டர் [   ]

ஈ) ஸ்பிக்மோமேனாமீட்டர் [   ]

11. சாப்பிடுவதற்கு முன் உள்ள இரத்த சர்க்கரையின் சராசரி அளவு என்ன?

அ) 70 – 100மி.கி / டெசி.லி [   ]

ஆ) 100 – 120 மி.கி / டெசி.லி   [   ]

இ) 120 – 140 மி.கி / டெசி.லி   [   ]

ஈ) 120-160 மி.கி / டெசி.லி   [   ]

12. இவர்களில் யார்? நீரிழிவு நோய் வருவதற்கான ஆபத்தில் இருப்பவர்?

அ) உடல் உழைப்பு இல்லாதவர்   [   ]

ஆ) அதிகம் உழைப்பவர்   [   ]

இ) சுமாராக உழைப்பவர்   [   ]

ஈ) இவர்கள் அனைவரும்   [   ]

பகுதி: 2 - நீரிழிவு நோய் வராமல் தடுக்கும் வழிமுறைக்கான வினாக்கள்

13. உடற்பயிற்சி ஒரு நாளைக்கு எவ்வளவு நேரம் செய்ய வேண்டும்

அ) 20 நிமிடம்   [   ]

ஆ) 30 நிமிடம்   [   ]

இ) 1 மணிநேரம்   [   ]

ஈ) இரண்டு மணிநேரம்   [   ]

14. உடற்பயிற்சியின் முக்கிய பயன்கள் யாவை?

அ) இரத்த சர்க்கரையின் அளவு கட்டுப்படுத்தப்படுகிறது   [   ]

ஆ) ஆற்றல் அதிகரிக்கிறது   [   ]

இ) மூளையின் வேலை சுத்தப்படுத்துகிறது   [   ]

ஈ) அதிக எதிர்ப்பு சக்தி கொடுக்கிறது   [   ]

15. இவற்றில் எவை உடற்பயிற்சியின் போது செய்ய கூடாதவை

அ) கடினமான உடற்பயிற்சி செய்ய வேண்டும்   [   ]

ஆ) அறுவை சிகிச்சைக்கு பிறகு உடற்பயிற்சி செய்ய வேண்டும் [   ]

இ) உணவு அருந்திய பிறகு உடற்பயிற்சி செய்ய கூடாது   [   ]

ஈ) உடல் எடையினை கண்டறிய கூடாது   [   ]

16. கார்போஹைட்ரேட் அதிகமாக உட்கொண்டால் என்ன நேரிடும்

அ) சீறுநீரக நோய்   [   ]

ஆ) உடல்பருமன்   [   ]

இ) மூளை நோய்   [   ]

ஈ) பக்க வாதம்   [   ]

17. இவற்றில் எவை நார்ச்சத்து நிறைந்த உணவு பொருட்கள்

அ) பார்லி   [   ]

ஆ) வெள்ளை ரொட்டி   [   ]

இ) தானியங்கள்   [   ]

ஈ) இறைச்சி   [   ]

18. எந்த வகையான கொழுப்புச்சத்தினை உணவில் அதிகமாக எடுத்துக் கொள்ள வேண்டும்

    அ) முட்டையின் மஞ்சள் கரு   [   ]

    ஆ) இறைச்சி   [   ]

    இ) தேங்காய்   [   ]

    ஈ) ஒமேகா - 3   [   ]

19. புரதசத்தின் முக்கிய பயன்கள் என்ன?

    அ) புரதம் குளுக்கோஸாக மாற்றி உடலுக்கு நல்ல ஆற்றலை   [   ]
        கொடுக்கிறது

    ஆ) கால்சியம் மீட்கப்படுகிறது   [   ]

    இ) திசு வளர்ச்சியை உறுதி படுத்துகிறது   [   ]

    ஈ) ஹார்மோன் உற்பத்திக்கு உதவுகிறது   [   ]

20. இவற்றில் எவை புரதச்சத்து நிறைந்த உணவுகள்?

    அ) தேங்காய் எண்ணெய்   [   ]

    ஆ) பாமாயில்   [   ]

    இ) வெண்ணெய்   [   ]

    ஈ) பருப்பு வகைகள்   [   ]

21. இவற்றில் எவை இரத்தக் சர்க்கரையின் அளவை கட்டுப்படுத்துவதில் முக்கிய பங்கு வகிக்கிறது?

    அ) வைட்டமின் இஇ மக்னீசியம் மற்றும் குரோமியம்   [   ]

    ஆ) வைட்டமின் பி இவைட்டமின் பி12   [   ]

    இ) வைட்டமின் எஇ வைட்டமின் சி   [   ]

    ஈ) வைட்டமின் பி1   [   ]

22. வைட்டமின் சி நிறைந்த உணவுகள்

    அ) நெல்லிக்காய்   [   ]

    ஆ) ஆப்பிள்   [   ]

    இ)திராட்சை   [   ]

    ஈ) மாம்பழம்   [   ]

23. எவ்வாறு உடல் எடையை கட்டுப்படுத்துவது

    அ) உடற்பயிற்சி   [   ]

    ஆ) தியானம்   [   ]

    இ) தூங்குவது   [   ]

ஈ) சாப்பிடுவது [   ]

24. எவ்வாறு மனஅழுத்தத்தை குறைப்பது

    அ) பிராத்தனைஇ தியானம் [   ]

    ஆ) பேசுவதுஇ ஆடுவது [   ]

    இ) வேலை செய்வது [   ]

    ஈ) அதிக சிந்தனை செய்வது [   ]

25. இவற்றில் எதை பின்பற்றுவதன் மூலம் நீரிழிவு நோய் வராமல் தடுக்க முடியும்

    அ) புகைபிடித்தல் மற்றும் மது அருந்துதலை தவிர்த்தல் [   ]

    ஆ) அதிகமான புகைபிடித்தல் [   ]

    இ) அதிகமான மது அருந்துதல் [   ]

    ஈ) புகையிலை எடுத்துக்கொள்ளுதல் [   ]

26. இரத்த சக்கரையின் அளவை பரிசோதித்தல் மற்றும் கண்காணிப்பதின் பயன் என்ன?

    அ) கொழுப்பு அதிகமாவதை தடுக்கலாம் [   ]

    ஆ) நீரிழிவு நோய் வருவதை தடுக்கலாம் [   ]

    இ) சிறுநீரக பிரச்சனையை தடுக்கலாம் [   ]

    ஈ) இருதய நோய்யை தடுக்கலாம் [   ]

27. Hb A1C (கிளைகேடட் ஹீமோகுளோபின) நீரிழிவு நோயில் என்ன பங்கு வகிக்கிறது

    அ) வைட்டமின் தரத்தை கண்டறியப்படும் [   ]

    ஆ) கொழுப்பின் தரத்தை கண்டறியப்படும் [   ]

    இ) இரத்த சர்க்கரையின் அளவை கண்டறியப்படும் [   ]

    ஈ) இரத்தத்தில் ஹீமோகுளோபின் அளவை கண்டறிய [   ]

28. இவற்றில் எந்த அளவு சர்க்கரை நோய் வருவதற்கு அதிக வாய்ப்பு இருப்பதை உறுதிப்படுத்தும்?

    அ) 5.6% க்கு கீழ் [   ]

    ஆ) 5.6% - 7.0% [   ]

    இ) 7.1% - 8.0% [   ]

    ஈ) 8% க்கு மேல் [   ]

29. இவற்றில் எவை நீரிழிவு நோயினால் வரும் பின் விளைவுகள்

    அ) பாதத்தில் ஏற்படும் விளைவு [   ]

    ஆ) இரத்ததில் [   ]

    இ) உடற் சோர்வு [   ]

    ஈ) உடல் பருமன் [   ]

30. இவற்றில் எவை உடல் எடையை கண்டறிவதற்கான ஒரு நிலையான பிரிவு

    அ) GTT (ஜீ.டி.டி)   [   ]

    ஆ) BM1 (பி.எம்.ஐ)   [   ]

    இ) ORS (ஒ.ஆர்.எஸ்)   [   ]

    ஈ) DVT (டி.வீ.டி)   [   ]

SELF INSTRUCTURAL MODULE ON KNOWLEDGE REGARDING PREVENTION OF DIABETIES MEELITUS AMONG PRE DIABETES

Section - D

Teaching Module on Prevention of Diabetus Mellitus among Pre Diabetes

General objectives

At the end of the teaching programme the non-diabetic people will acquire adequate knowledge on prevention of diabetes mellitus and will be able to apply the healthy regimen in their daily living so as to prevent it.

Specific objectives

➢ At the end of the teaching programme,participants will be able to:

➢ explain the anatomy of pancreas in the body

➢ define diabetes mellitus

➢ mention the type of diabetes

➢ list down the risk factor of diabetes mellitus

➢ enumerate the causes of diabetes mellitus

➢ list out the sings and symptoms of diabetes mellitus

➢ describe the main complication f diabetes

➢ explain the preventive measure of diabetes mellitus

Introduction

Life style disease are set of disease usually related to our changing urban way of life. The Important factors contributing to these disorders are too much work, too much stress, round the clock working hours, bad eating habits, and sedentary life with little or no exercise. In many diseaseour life style may be an important causative factor or may aggravate the disease. One of the important life style related disease is diabetes mellitus.

Anatomy and physiology of pancreas:

The endocrine system and the nervous system are two of the primary communicating and co-ordinating system in the body .the nervous system communicating through nerve impulses. The endocrine system communicate through the chemical substance known as hormone.

The endocrine gland include the hypothalamus, pituitary, thyroid, parathyroid gland, adrenal, pancreas, ovaries, testes and pineal gland

Anatomy of Pancreas:
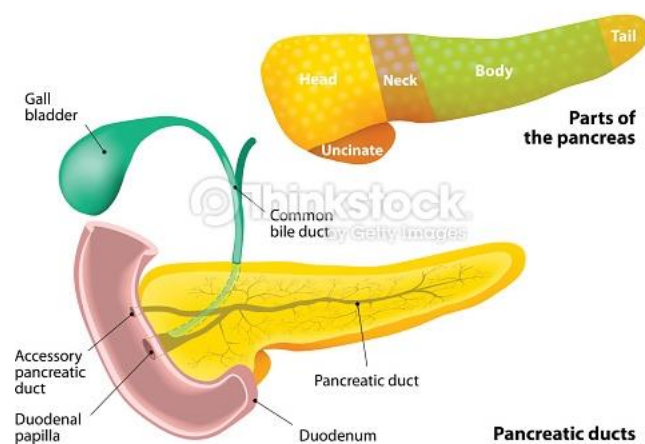
- ➢ The pancreas is a pale grey gland.
- ➢ It's weight in60gram
- ➢ It is about 12 to 15 cm long
- ➢ It is located behind the stomach.
- ➢ It consist of a broad head, a body and a narrow tail.

The role of the pancreas in the body:

The pancreas also produces the hormone insulin and secrete in to the blood stream, where it regulate the body glucose or sugar level.

It plays an essential role in converting the food we eat in to fuel the body's cells.

❖ **Two main function:**

➢ Exocrine- that helps in digestion

➢ Endocrine- that is regulate blood sugar

The endocrine cells of the pancreas produce hormone that control certain metabolic function including blood sugar regulation and digestion some of the hormone produced by the islets of the Langerhans cells include

1. Insulin- lowers glucose concentration in the blood
2. Glucagon-raises glucose concentration in the blood
3. Gastrin-stimulates gastric acid secretion to the aid digestion in the stomach.

Definition:

Diabetes mellitus is a chronic disease either inherited or acquired caused due to the deficiency in production of insulin by the pancreas or by the ineffective usage of produced insulin result in increased concentration of glucose in the blood which in turn damage many of the body's system in particular the blood vessels and nerves.

-WHO

Types of diabetes mellitus:

✓ **TYPE 1 diabetes:**

When the body loses the ability to make insulin or can make a very small amount of insulin type 1 diabetes is usually caused by an auto immune process, and your body's immune system mistakenly destroys the insulin producing cells about 10% of individual with diabetes have type 1 diabetes.

✓ **TYPE 2 diabetes:**

Caused by the dual deficit of resistance to the action of insulin combined with an inability to make enough insulin to overcome the resistance type 2 diabetes is most common form of diabetes and represent 80% to 90% of diabetes worldwide.

Incidents:

➢ At 2014 it was estimated that over 442 million people through out the world had diabetes

➢ In india 2015 was estimated that 69.1 million people had diabetes

➢ In Tamil nadu 2016 was estimated that 42laks people had diabetes and 30 laks people pre diabetes

Risk Factor and Causes of Diabetes Mellitus:
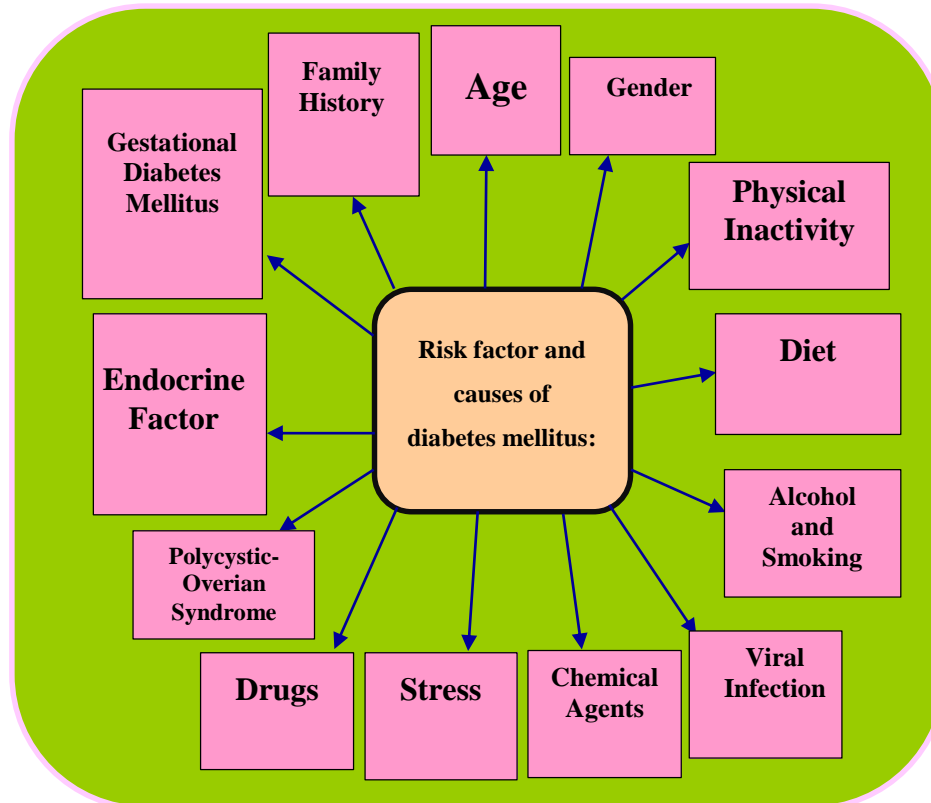
Pathophysiology of type 2 diabetes mellitus:
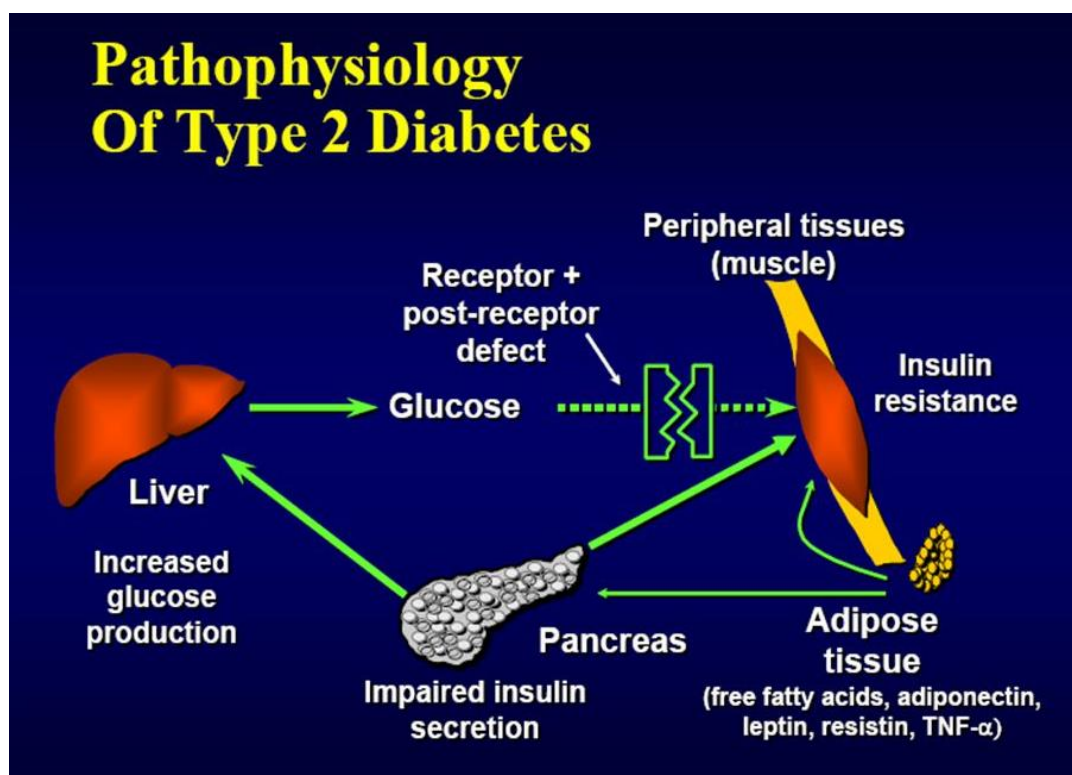
Sings and symptomps of type 2 diabetes:

Traid symptoms:

Polyuria (increased urination): Excess sugar (glucose) builds up in blood so kidney are forced to work over time to filter and absorb the excess sugar in diabetes patient even more than 3 litter in a day	
Polydipsia (increased thirst): Excess sugar builds up in your blood your kidney are forced to work over time to filter and absorb the excess sugar so increase hunger occur excretion of large volume of urine so result of abnormal thirst	
Polyphagia (increased hunger): Lack of insulin or insulin resistance so the body can't convert the food in to energy this lack of energy cause an increase in hunger.	

Other symptoms:

Weakness and fatigue	
Unexpected weight loss	

Tingling or numbness	
Blurred vision	
Sores that heal slowly	
Frequent infection	
Dry itchy or scaly skin	
Irritability	

Complication:

One of the main complication which occur due to uncontrolled diabetes mellitus. The main organ affected by diabetes mellitus are heart, eye, kidney

1. **Neuropathy**: diabetic neuropathy is a type of nerve damage which can lead to several different problems.nerve damage from diabetes can cause you to lose feeling in your feet. You may not feel a cut, a blister or sore. if you do get a sore or infection. Increased blood sugar level so affect eye leads to diabetic retinopathy.

2. **Heart Problem and Stroke:** such as ischemic heart disease when the blood supply to the heart muscle is diminished. if blood pressure cholesterol level, and blood glucose level are not controlled, the risk of stroke increase significantly

3. **Eye Complication:** If developed diabetes mellitus to affect the eye. It appears that altered metabolic processes with in the lence cause an accumulation of water and alteration in the lens fiber structure.

4. **Nephropathy:** increased blood glucose level affect the renal function so lead to kidney damages

Prevention of Diabetes Mellitus:

Many factors help to reduce risk of developing diabetes mellitus thereby enhancing them to lead a healthy life.

 i. Regularising Exercise.

 ii. Diet Modification.

 iii. Sress & their management

 iv. Quit smoking & alcholol

 v. Screening and monitoring for pre diabetes.

i. Exercise:

Physical activity (or) exercise can have immediate &long term health benefits most importantly regular activity can improve your quality of life .Pre diabetes is basically an indication that could develop type 2 diabetes and one of best way to prevent this from happening is to exercise regularly.Some of the regular exercise which can be done regularly are explained/presented below Benefits of exercise:

❖ It strengthens the heart muscles and maintains the healthy body weight.

❖ The more intense the activity the more calories will burn

❖ Exercise combats health condition & disease.During exercise blood flowing smoothly & reduced high density lipo protein &decrease risk of CVD

❖ Exercise improves mood:Physical-activity stimulates various brain chemicals that may leave your feeling happen & more relaxed.

❖ Exercise boost energy:Regular physical activity can improve the muscle strength & boost your endurance.

❖ It help to improve glucose control more acutely and over a longer period

❖ it help to lowering abdominal fat and increase the lower body muscle mass

ii.   **Exercise session:**

Short bursts of physical exercise 30 minutes/day about 4 times a week is sufficient to get rid of fat and burn up glucose .each session should include a warm up phase (5 minutes), exercise period (10-20 minutes) and cool down period 5 minutes. The patient should gradually increase the exercise period.

Lets look at some top exercise for prediabetes:

I.   Brisk walking
II.   Muscle strengthing exercise
III.   Flexibility
IV.   Jogging
V.   Cycling

Brisk walking:

❖ a minimum of 30 minutes of brisk walking or swimming to help manage insulin levels better in the body

❖ Exercise should be done daily or at least 5 times a weak.

❖ This kind of exercise usesthigh & knee muscles.

❖ Resistance training/ Strength training:(muscles strengthening)

❖ Theresistance training without any dietary intervention improve the glucose tolerance in pre diabetes individual.

❖ Under taking resistance training like using weights, resistance bands or even using ones body weights helps lower blood sugar levels in the body.

Flexibility exercise:

Daily flexibility exercises can prevent pain, stiffness, and injury of muscles and joints. People often experience a sense of wellbeing and relaxation during flexibility exercises. Some quick and simple movements can be found in our separate exercise sheet. Yoga, Tai Chi and Pilates are examples of some activities which combine strength and flexibility as well as balance training.

➢ High intensity interval training:(jogging)

➢ High intensity interval exercise lot of supporting the potential benefits for pre diabetes.

➢ it should be done about 30 mints, 3-5 times per weak.

➢ During jogging the muscles of the leg are utilized
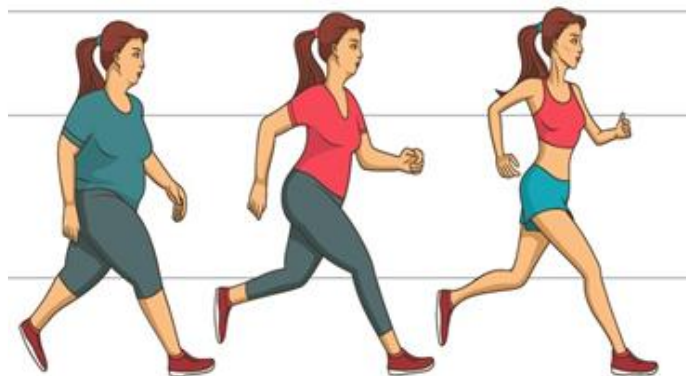
❖ **Cycling:** physical activity is the promotes the consumption of glucose in the muscles and helps to maintain normal blood sugar levels"

➢ It increase muscles strength and flexibility and improved joint mobility

➢ Uses of mucles: The quadriceps & hamstrings do mostly uses of bicycles One test 20 minutes into your ride will enable you to gauge the trend of your blood sugar. If you are new to cycling this should then be conducted every 30 minutes onwards.

Exercise Tips (Do's and Don's):

DO'S	DON'TS
Exercise at the same time everyday	During exercise if you feel any tired ness can you stop the exercise immediately
To follow time and duration	If you have any surgery means to stop exercise
To follow food restriction	Do not exercise On after intake of food
To identify in your weight	Do not weight checking after finishing exercise
During exercise wear lose cloth	Do not wear tight cloth
To follow warm up period and exercise Period and cool down period	Do not follow the heavy exercise

To follow this type of exercise to prevent the diabetes mellitus.

ii. **Diet Modification:**

Carbohydrate:

Carbohydrate is a group of sugar which is the energy source of our body. If we have too much of carbohydrate contains food which obviously will increase the glucose level in blood. The carbohydrate are of two types, they are simple and complex carbohydrate.

➢ Simple carbohydrate are common sugar in the form of Sucrose(sugar), Fructose(fruits), Lactose(milk).Even though it provides energy required to perform physical & mental function, this kind of food intake may likely to increase glucose level in blood. Hence these items should be taken within limit to prevent the development of diabetes mellitus.

The food items rich in simple carbohydrates are
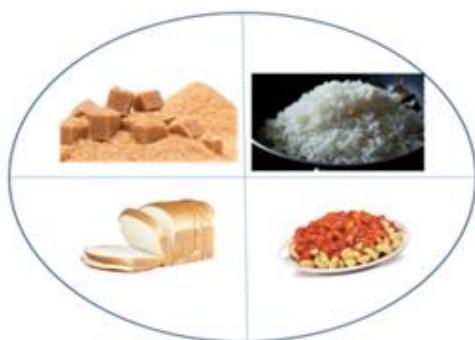
✓ Raw sugar

✓ Brown sugar

✓ Rice

✓ Pasta

✓ White bread

Fruits like:

1. Pomagrane
2. Jack fruit
3. Grapes
4. Fruits juice

NSP (non starch polysaccharides) Complex carbohydrate are better for health because they take longer time for your body to digest. They give you steady energy & fiber.

The food items rich in complex carbohydrates are

❖ **Fiber complex carbohydrate:**

➢ Brown rice: Brown rice can be amazing to control diabetes with indian food, unlike white rice brown rice is high nutritious sources of important minerals selenium.It best source of mineral, manganese, with helps in maintain a healthy nervous system.

➢ Oats:It contain loaded with soluble fibre and low carbohydrate so it will help to reduce weight and maintain blood glucose level.

➢ Quinona: Quinona is rich in minerals and plant compounds. It contains 22% carbs which make it a high carbs food. It is also one among the few foods that are both carbohydrate rich food and effective weight reducing food.

➢ Fenugreek seeds: Fenugreek seeds or methi seeds are one of the top super foods for diabetes mellitus prevention and control.

➢ 100gm of fenugreek seeds is enough to lower fasting blood sugar level.

➢ Psyllium seeds:Psyllium husk is one of the major foods prevent diabetes. It reduces the rise in glucose levels after consuming foods and hence a high intake of viscous fiber is linked to low risk of developing diabetes.

Fiber Rich Foods

➢ Parlie
➢ Oats
➢ Beans
➢ Cereals
➢ Brown Rice

Fat

➢ Fat is essential part of our diet and nutrition, and we can't live with out it.If you take excess amount of fat each day can lead to obesity.

➢ Recommended dietary of fat less than 130 g / day

Unsaturated Fat: its otherwise called good or healthy fat as it contains omega-3 fatty acids whichlowers your bad cholesterol and it help to prevent clogging of the arteries.it should be taken in limited level.

Unsaturated fat food items:

➢ Olive oil
➢ Corn oil
➢ Fish oil
➢ bran
➢ Soya bean oil
➢ Walnut
➢ Pumpkin seeds
➢ Almonds
➢ Salmon fish
➢ Soya been
➢ Avacoda

❖ Saturated fat: it's otherwise called bad or unhealthy fats because they can raises blood cholesterol level which result in risk of heart disease. Hence it should be avoided.

Saturated fat food items:
✓ Egg yolk
✓ Meat
✓ Poultry skin
✓ Coconut
✓ Butter
✓ Palm oil

- ✓ Beef
- ✓ Pork
- ✓ Cream
- ✓ Soyabeans

❖ **Protien:**

- ✓ Proteins are large, complex molecules that play many critical role in the body.
- ✓ Protein is important to aid in growth & maintenance of body tissues.
- ✓ Function of protein is sources of energy, transport of oxygen muscle contraction & immunity sources.
- ✓ They help in building tissue and muscles, controlling blood sugar concentration and boost immune system.
- ✓ Amino acids stimulate insulin secretion hence protein combined with carbohydrate in diet lower the blood sugar effectively. Protein stimulate appetite also. Daily intake of proteins should be 60-100g (1.0-1.5g/kg) divided between meals constituting 10-15% of total calories.

- ▪ Protein rich food:
  - ✓ Egg white
  - ✓ Almond
  - ✓ Chickenbreast
  - ✓ Oats
  - ✓ Millets
  - ✓ Cerals and pulses
  - ✓ Yougurt
  - ✓ Milk
  - ✓ Broccoli
  - ✓ Quinoa
  - ✓ Legumes
  - ✓ Fish

❖ **Vitamins &minerals**: micro nutrients are vitamins and minerals that our body require in small quantities for metabolic reaction and this help support basic cellular reaction. It's potentially preventive and treatment agent for both type1 and type 2 diabetes.

- **Vitamin E, magnesium and chromium plays a important role in lowering and maintain the body's glucose content.**

- Vitamin E,an anti oxidant provide better strength to the beta cells of pancreas to secrete more insulin to reduce the glucose level in the blood.

- Magnisum and chromium are both essential mineral. When your magnesium is depleted, your body's resistance to the effect of insulin increases.

- Chromium boosts the effectiveness of insulin and helps maintain normal blood sugar level.

Vitamin E, Magnesium and chromium rich foods:

1. Avocado
2. Sunflower seeds
3. Spinach
4. Whole grain
5. Black pepper
6. Green beans
7. Raw onion
8. Broccoli
9. Wheat bread
10. Green leafy vegetables

Other vitamin rich foods:

- ✓ Carrot
- ✓ Amla
- ✓ Fish
- ✓ Vegetables
- ✓ Green leafs
- ✓ grapes

iii) Stress

Stress is the feeling of strain & pressure. Stress may rise glucose level in blood leading to hyperglycemia. Stress have a two types that is physical stress & psychological stress. The body reacts to these changes with physical, mental, and

emotional response. Both emotional and physical stress can increase the blood glucose level and result in hyperglycemia.

I. Way to reduce the stress :

- Exercise
- Call a good friend
- Listen to music.
- Meditation
- Calm imaginary
- Prayer

  These all are the help to relax the mind & calm down of stress

iv) Limit alcohol & Quit smoking

- Alcohol can interfere with blood sugar level.
- Excessive consumption can reduce the effectiveness of insulin.
- Alcohol can increase blood pressure
- Because of the calories in alcohol, regular consumption can make it difficult to shift additional weight.
- If you have frequent thought of alcohol consumption to do the commentiate actions of to take recommended fruits juice.

Quit smoking:

- Smoking is a high risk of serious health problems.
- It is increasing blood glucose level. Tobacco use can increase insulin resistance stimulate stress hormone and both increase blood glucose levels and make it more difficult to manage pre-diabetes

vi) Screening and monitoring for pre diabetes:

- ➢ Impaired fasting glucose (IFG)
- ➢ Impaired glucose tolerance(IGT)
- ➢ HBA1C(Glycosylated Hemoglobin)
- ➢ OGT(Oral Glucose Tolerance test)
- ➢ Urine sugar test

Impaired fasting glucose (IFG):

This is a detected on blood sugar estimation, e.g raised fasting blood sugar reading >110 mg% but less than 126mg% (Normal fasting blood glucose is taken <110 mg). This abnormality is considered as prediabetic state, predisposes the individuals to increased risk of developing type 2 diabetes mellitus.

> **Impaired glucose tolerance(IGT)**

This is defined as abnormal postprandial glucose on gtt with normal fasting levels. The blood glucose levels lie between 140-200mg%.this is considered as a transition phase between normal and diabetic person, is a prediabetic condition.

> **HBA1C(Glycosylated Hemoglobin)**

HBA1c refers to glycated haemoglobin (A1C), which identifies average plasma glucose concentration. The glycatedhaemoglobin can be used to reflect average blood glucose levels over that duration

- Hba1c occurs when haemoglobin, the oxygen-carrying protein in red blood cells, becomes bonded with glucose in the bloodstream. The bonding with glucose is called glycation. The higher number of red blood cells that will have become glycated, and therefore the higher hba1c level.
- Annually to assess the glycemic status like fasting plasma glucose, HB A1C, oral glucose tolerance test.

USES & VALUES OF HBA1C

It is useful in providing a longer term effects of blood glucose control by measuring glycated haemoglobin. It would be helpful to get an overall picture of what our average blood sugar levels have been over a period of weeks / months. For people with diabetes this is important, as higher the HBA1c,the greater the risk of developing diabetes –related complications

     ✓ Below 6.0 %   =   normal

     ✓ 6.0 – 6.4 %   =   pre-diabetes

     ✓ 6.5 – over   =   diabetes

> **Impaired glucose tolerance (IGT)**

Fasting sample of blood is taken for glucose estimation and then 75.0 g of glucose dissolved in 300ml (a glass) of water is given by mouth. Samples of blood and urine are collected at half an hour intervals for next 2 hours for glucose measurement.

vi) Monitor the body weight & compare that weight to previous body weight.

BMI = Calculated as weight/height m2

✓ The standard weight status categories associated with BMI range for adult.

BMI	WEIGHT STATUS
below 18.5	under weight
18.5 to 24.9	normal or healthy weight
25.0 to 29.9	over weight
3.0 & above	Obese

Summary

Diabetes mellitus can be controlled by the life style modification the health should be maintained by person to avoid ill effects, because prevention is better than cure.

Conclusion

This self instructional module is able to educate the pre diabetic people for prevention of diabetes mellitus through life style modification that it may decrease the morbidity and mortality.

நீரிழிவு நோய் வராமல் தடுப்பதைப் பற்றிய

தகவல்கள்

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நீரிழிவு நோய் வராமல் தடுக்கும் வழிமுறைகள்

முன்னுரை

தற்போது வாழும் நகர்புற மக்களின் வாழ்க்கைமுறை மாற்றத்தினால் பலவித நோய்கள் உருவாகிறது. அதிகமான வேலைப்பளு மற்றும் தொடர்ந்து வேலை பார்த்தல், அதிகமான மனஅழுத்தம், முறையற்ற உணவுப்பழக்கம் மற்றும் உடற்பயிற்சி செய்யாமல் இருத்தல் ஆகியவை நோய்கள் உருவாக காரணமாகின்றன. மரபணு காரணிகளும் இவைகளில் ஒன்றாகும். இவ்விதமான வாழ்க்கை முறை மாற்றத்தினால் ஏற்படும் நோய்களுள் ஒன்று நீரிழிவு நோய்.

கணையத்தின் அமைப்பு
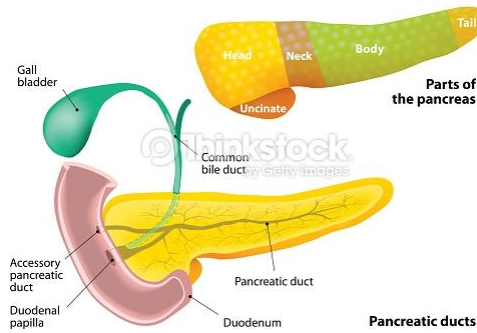
- ✓ கணையம் வெளிர் சாம்பல் நிறத்தில் உள்ளது.
- ✓ இதன் எடையானது 60 கிராம்
- ✓ கணையம் 12 முதல் 15 செ.மீ நீளத்தில் உள்ளது.
- ✓ கணையமானது வயிற்றின் கீழ்பகுதியில் அமைந்துள்ளது.

✓ கணையமானது பரந்த தலை மற்றும் உடலிருந்து குறுகிய வால் அமைப்பையும் கொண்டிருக்கும்.

கணையத்தின் வேலைகள்

கணையத்தில் உள்ள இஸ்லெட் – லாங்கர்கான் என்னும் இரத்த திட்டுகளிலிருந்து இன்சுலின் என்னும் ஹார்மோன் உற்பத்தியாகிறது.

எக்ஸோகிரைன் – இவை செரிமானத்திற்கு உதவுகிறது.

எண்டோகிரைன் (நாளமில்லா) – இவை உடலில் உள்ள இரத்த சர்க்கரையின் அளவைக் கட்டுப்படுத்த உதவுகிறது.

1. இன்சுலின் – இரத்ததில் உள்ள சர்க்கரையின் அளவை குறைகிறது.
2. கிளைக்கோஜென் – இரத்ததில் உள்ள சர்க்கரையின் அளவை அதிகப்படுத்துகிறது.
3. கேஸ்ட்ரீன் – வயிற்றில் சுரக்கப்படும் இரைப்பை அமிலமானது செரிமானத்திற்கு தூண்டப்படுகிறது.

இவ்வாறாக இரத்த சர்க்கரையின் அளவு கட்டுபடுத்தப்படுகிறது.

வரையறை

நீரிழிவு நோய் என்றால் என்ன?

நீரிழிவு நோய் என்பது இரத்தத்தில் உள்ள சர்க்கரையின் அளவு கூடுதலாக காணப்படுவதாகும். உடலில் இன்சுலின் உற்பத்தி குறைவதாலும் அல்லது உடலில் உள்ள செல்கள் இன்சுலினை பயன்படுத்துவதில் சிக்கல்கள் ஏற்படுவதாலும் நீரிழிவு நோய் வர நேரிடும்.

நீரிழிவு நோயின் வகைகள்

வகை : 1 இன்சுலின் சார்ந்த நீரிழிவு நோய்

வகை : 2 இன்சுலின் சாராத நீரிழிவு நோய்

இன்சுலின் சார்ந்த நீரிழிவு நோய்

நமது உடலில் கணையம் என்னும் உறுப்பில் உள்ள பீட்டா எனப்படும் செல்கள் இன்சுலினை உற்பத்தி செய்கின்றன. அவ்வகையான பீட்டா செல்கள் அழிக்கப்படுவதால் இன்சுலின் உற்பத்தி முற்றிலுமாக பாதிக்கப்படுகிறது. இதனை இன்சுலின் சார்ந்த நீரிழிவு நோய் என்று அழைக்கின்றோம்.

இன்சுலின் சாராத நீரிழிவு நோய்

கணையத்தில் சுரக்கப்படும் இன்சுலின் அளவு குறைவாக உற்பத்தி செய்யப்படுவதாலும் இன்சுலினை பயன்படுத்துவதில் திசுக்களில் சிக்கல்கள்
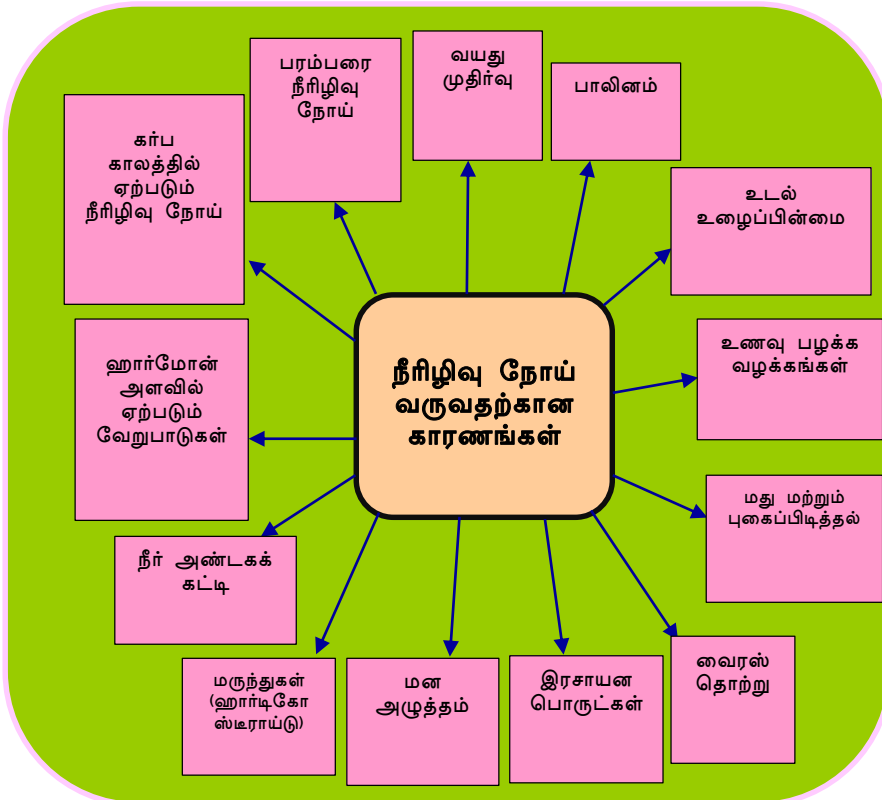
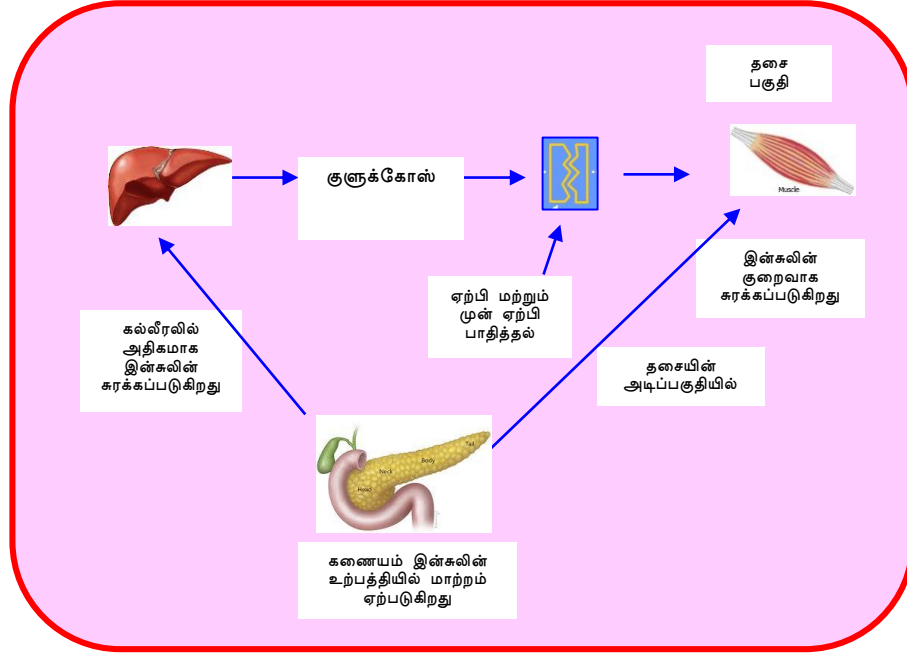ஏற்படுவதாலும் உண்டாகக் கூடிய நோயினை இன்சுலின் சாரா நீரிழிவு நோய் என்று அழைக்கின்றோம்.

நிகழ்வுகள்

1. உலக அளவில் 2014ம் ஆண்டு 422 மில்லியன் மக்கள் பாதிக்கப்பட்டுள்ளனர்.

2. 2015ம் ஆண்டு இந்தியாவில் 69.1 மில்லியன் மக்கள் பாதிக்கப்பட்டுள்ளனர்.

3. 2016ம் ஆண்டு தமிழ்நாட்டில் 42 லட்சம் மக்கள் நீரிழிவு நோயினால் பாதிக்கப்பட்டுள்ளனர். ஆதில் 30 லட்சம் பேர் நீரிழிவு நோய் வர அதிக வாய்ப்பு உள்ளவர்கள் ஆவர்.

நீரிழிவு நோய் வருவதற்கான காரணங்கள்

நீரிழிவு நோயினால் உடலில் ஏற்படும் மாறுபாடுகள்

நீரிழிவு நோய்க்கான அறிகுறிகள்

மூன்று முக்கிய அறிகுறிகள்

அடிக்கடி சிறுநீர் கழித்தல் (பாலியூரியா) உடலில் இரத்த சர்க்கரையின் அளவு அதிகமாக இருப்பவர்களுக்கு சிறுநீர் வழியாக குளுக்கோஸ் வெளியேற்றப்படும். எனவே சிறுநீரகத்தின் வேலை அதிகமாக இருக்கும். இதனால் நீரிழிவு நோயினால் பாதிக்கப்பட்டவர்கள் அடிக்கடி சிறுநீர் கழிப்பார்கள். ஒரு நாளைக்கு 3 லிட்டருக்கும் அதிகமாக சிறுநீர் கழிக்கின்றனர்.	
அதிகபடியான தாகம் (பாலிடிப்ஸியா) உடலில் இரத்த சர்க்கரையின் அளவு அதிகமாக இருப்பவர்களுக்கு சிறுநீரகமானது நீரில் உள்ள குளுக்கோசை பிரித்தெடுக்க இயலாமல் சிறுநீர் வழியாக குளுக்கோஸ் வெளியேறுகிறது. ஆகையால் உடலில் நீர் வறட்சி உருவாகி அதிக தாகம் ஏற்படும்.	

அடிக்கடிப் பசி எடுத்தல் (பாலிபேஜியா) உடலில் இரத்த சர்க்கரையின் அளவு அதிகமாக இருந்தால் அவர்களின் உடலில் உள்ள திசுக்களால் இன்சுலினை சரிவர பயன்படுத்த முடியாது எனவே உணவில் உள்ள குளுக்கோஸை ஆற்றலாக மாற்றுவதில் சிக்கல்கள் ஏற்படுகிறது. ஆகவே போதிய உணவினை உட்கொண்டாலும் உடற்சோர்வு ஏற்பட்டு மீண்டும் மீண்டும் பசி எடுக்கும்.	

இதர அறிகுறிகள்

உடற்சோர்வு	
எதிர்பாராத உடல் எடைக் குறைவு	
கூச்சம் (அல்லது) உணர்வின்மை	
மங்கலான பார்வை	

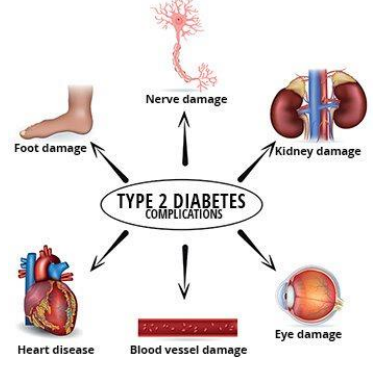|	
ஆறாத புண்கள்	
அடிக்கடி நோய் தொற்று	
உலர் அரிப்பு / செதில் தோல்	
எரிச்சல் அடைதல்	

நீரிழிவு நோயினால் ஏற்படும் பின் விளைவுகள்

நீரிழிவு நோயினால் முக்கியமான உடல் உறுப்புகள் பாதிக்கப்படும் அவைகள் பின்வருமாறு.

1. நரம்பு சார்ந்த பின்விளைவுகள்

அதிக இரத்த சர்க்கரையினால் நரம்புகள் சேதமடைந்து நரம்பு சார்ந்த பிரச்சனைகள் உருவாகிறது.

நீரிழிவு நோயினால் நரம்புகள் பாதிப்படைவதன் விளைவாக பாதங்களில் புண்களோ, வெட்டுக்காயங்களோ ஏற்பட்டால் பாதங்களில் உணர்வு மந்தமடைகிறது. இதனால் பாதப்புண்ணுடன் கூடிய தொற்று நோய்கள் ஏற்பட அதிக வாய்ப்புள்ளது.

இரத்த சர்க்கரையின் அளவு அதிகமாக இருப்பதால் விழித்திரையில் உள்ள இரத்த நாளங்களில் மாற்றங்கள் ஏற்பட்டு நீரிழிவு ரெட்டினோபதி என்னும் நோய் உருவாகிறது.

2. இருதய நோய் மற்றும் பக்கவாதம்

நீரிழிவு நோயினால் இரத்த நாளங்கள் அதிகமாக பாதிப்படைவதால் இருதய கோளாறு மற்றும் பக்கவாதம் போன்ற நோய்கள் ஏற்பட வாய்ப்புள்ளது.

3. கண் குறைபாடுகள்

இரத்த சர்க்கரையின் அளவு அதிகமாக இருந்தால் கண்களில் வளர்சிதை மாற்றம் ஏற்பட்டு அதன் காரணமாக கண்களில் உள்ள ஒளிவில்லையில் நீர் கோர்க்கப்பட்டு கண்புரை நோய் ஏற்படும்.

4. சிறுநீரகம் சார்ந்த பின் விளைவுகள்

நீரிழிவு நோயினால் சிறுநீரகங்களில் உள்ள இரத்த நாளங்கள் பாதிக்கப்படும். இதனால் சிறுநீரகங்கள் சரிவர இரத்தத்தை சுத்தம் செய்ய முடியாததால் சிறுநீரக தொற்று ஏற்பட அதிக வாய்ப்புள்ளது.

நீரிழிவு நோய் வராமல் தடுப்பதற்கான வழிமுறைகள்

ஒரு சில வழிமுறைகளால் நாம் நீரிழிவு நோய் வராமல் தடுத்து ஆரோக்கியமான வாழ்க்கைக்கு வழி வகுக்கலாம்.

1. உடற்பயிற்சி
2. சரிவிகித உணவு
3. மன அழுத்தத்தை கட்டுப்படுத்துதல்
4. மது அருந்துதல் மற்றும் புகைப்பிடித்தலை தவிர்த்தல்
5. இரத்த சர்க்கரையின் அளவை பரிசோதித்தல் மற்றும் கண்காணித்தல்

1. உடற்பயிற்சி

உடற்பயிற்சியானது நமது வாழ்க்கையை ஆரோக்கியமாக வாழ வழி வகுக்கும். உடற்பயிற்சியை தினமும் மேற்கொண்டால் நீரிழிவு நோய் வருவதை தடுக்கலாம்.

பயன்கள்

- உடல் எடை கட்டுப்படுத்தப்படுகிறது
- இரத்தத்தில் சர்க்கரையின் அளவு சீராக்கப்படுகிறது
- இரத்தத்தில் கொழுப்புகளின் அளவு குறைக்கப்பட்டு தேவையற்ற கலோரிகள் சிதைவடைகிறது.
- இருதய தசைகள் வழுப்பெறுகிறது.
- இரத்த ஓட்டத்தை மேம்படுத்துகிறது.
- உடலுக்கும், மூளைக்கும், புத்துணர்ச்சியை கொடுக்கிறது.

உடற்பயிற்சிக்கான கால நேரங்கள்

ஒரு வாரத்திற்கு நான்கு முறை என ஒரு நாளைக்கு 30 நிமிடங்கள் உடற்பயிற்சியினை மேற்கொள்ள வேண்டும். இதில் உடற்பயிற்சி செய்வதற்கு முன் உடலை தயார் படுத்த 5 நிமிடம் உடற்பயிற்சியினை மேற்கொள்ள 10-20 நிமிடம் மற்றும் உடற்பயிற்சி செய்த பிறகு நிதான நிலைக்கு வருவதற்கு 5 நிமிடம் என எடுத்துக் கொள்ள வேண்டும்.

உடற்பயிற்சியின் வகைகள்

- நடைபயிற்சி
- தசை வலுப்பயிற்சி
- தளர்வு நிலை உடற்பயிற்சி
- மிதமான ஓட்டப்பயிற்சி
- சைக்கிள் பயிற்சி

I. நடை பயிற்சி

நடைபயிற்சியின் மூலம் உடலில் தசைகளில் உள்ள தேவையற்ற கொழுப்புகள் குறைக்கப்பட்டு உடலில் உள்ள இரத்த சர்க்கரையின் அளவு கட்டுப்படுத்தப்படும். இந்த நடைப்பயிற்சிக்கு முதலில் உடலை தயார் படுத்த வேண்டும். பிறகு சுறுசுறுப்பாக நடக்க வேண்டும். அதன் பிறகு உடலை நிதான நிலைக்கு கொண்டு வர வேண்டும். இவ்வாறு சுறுசுறுப்பாக நடக்கும் நேரத்தை படிப்படியாக அதிகரிக்க வேண்டும். இந்த நடைபயிற்சியை ஒரு வாரத்திற்கு 5 முறை செய்ய வேண்டும்.

II. தசை வலுப்பயிற்சி

தசை வலுப்பயிற்சி என்பது உடலில் உள்ள தசைப்பகுதிகளில் சேர்ந்துள்ள தேவையற்ற கலோரிகளை சிதைவடைய செய்கிறது. தினமும் நடைபயிற்சி மேற்கொள்ளும் போது அதனுடன் சேர்ந்து இந்த பயிற்சியையும் செய்யலாம். ஒரு பொருளை பிடித்துக் கொண்டு

உட்காரந்து எழுந்திருத்தல் மற்றும் மிதமான எடையுடைய பொருளை தூக்கி இறக்குதல் (dumbbles) இவ்வாறு செய்யும் பொழுது உடலில் உள்ள கால் மற்றும் கை, வயிறு, நெஞ்சுப் பகுதியில் சேர்ந்துள்ள தேவையற்ற கொழுப்புகள் சிதைவடைந்து மற்றும் உடலில் உள்ள இன்சுலின் அளவு சீராக்கப்பட்டு இரத்த சர்க்கரையின் அளவு கட்டுப்படுத்தப்படுகிறது. இந்த உடற்பயிற்சியை வாரம் இரண்டு முறை செய்தால் போதுமானது. மேலும் வயதானவர்கள் இந்த உடற்பயிற்சியை செய்ய வேண்டாம்.

தளர்வுநிலை உடற்பயிற்சி (Flexibility)

தினமும், யோகா மற்றும் தியானம் நிலை உடற்பயிற்சி செய்யும் பொழுது மனம் அமைதி நிலை பெறுகிறது. அதனுடன் தசை மற்றும் மூட்டுப்பகுதி வலுப்பெற்று உடல் சமநிலை அடைகிறது. இதனால் மன அழுத்தம் மற்றும் இன்சுலின் செயல்பாடுகள் சீராக்கப்படுகிறது. இதனால் நீரிழிவு நோய் வராது.

மிதமான ஓட்டப் பயிற்சி
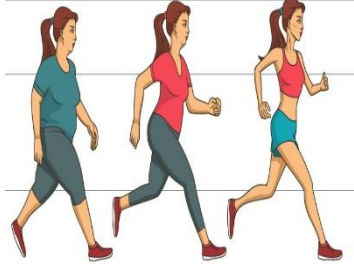
மிதமான ஓட்டப்பயிற்சியின் மூலம் உடலில் உள்ள தேவையற்ற கலோரிகள் குறைக்கப்பட்டு இரத்த சர்க்கரையின் அளவு சீராக்கப்படுகிறது. இதனால் நீரிழிவு நோய் வருவதை தடுக்கலாம். மேலும் இப்பயிற்சியை மேற்கொள்ள முடியாத நபர்கள் நடைபயிற்சியை தொடர்ந்து செய்யலாம்.

சைக்கிள் பயிற்சி

தினமும் சைக்கிள் பயிற்சி மேற்கொள்வதால் உடலுக்கு அதிக படியான ஆற்றல் தேவைப்படும். ஆகையால் உடலில் இரத்த சர்க்கரையின் அளவில் மாற்றம் ஏற்படுகிறது. எனவே உடலில் உள்ள இரத்த சர்க்கரையின் அளவு சீராக்கப்படுகிறது. இந்த சைக்கிள் பயிற்சியை 20 முதல் 30 நிமிடங்களுக்குள் செய்து முடிக்க வேண்டும்.

உடற்பயிற்சியின் போது செய்யக்கூடியவை மற்றும் செய்யக்கூடாதவை

செய்யக்கூடியவை	செய்யக்கூடாதவை
உடற்பயிற்சியை தினமும் ஒரே நேரத்தில் செய்ய வேண்டும்.	உடற்பயிற்சியின் போது மயக்கம், சோர்வு, இருந்தால் உடனே உடற்பயிற்சியை நிறுத்த வேண்டும்.
உடற்பயிற்சியினை இடைவெளி விட்டு செய்ய வேண்டும்	உடலில் ஏதேனும் அறுவை சிகிச்சை செய்திருந்தால் உடற்பயிற்சியை செய்யக் கூடாது.

உடற்பயிற்சி செய்யும் போது உணவு கட்டுபாடு அவசியமானது	உணவு அருந்திய பிறகு உடற்பயிற்சி செய்ய கூடாது.
உடல் எடையினை கண்டறிதல் வேண்டும்	உடல் எடையினை கண்டறியாமல் இருக்கக் கூடாது.
உடற்பயிற்சி செய்யும் போது தளர்வான உடையை அணிய வேண்டும்.	இறுக்கமான உடையை அணியக் கூடாது.
உடற்பயிற்சி செய்யும் போது உடலை தயார் படுத்தி அதன் பிறகு தளர்வு நிலைக்கு கொண்டு வர வேண்டும்.	கடினமான உடற்பயிற்சியை செய்யக் கூடாது

இவ்வாறு மேற்கண்ட உடற்பயிற்சியினை தினமும் செய்வதன் மூலம் நீரிழிவு நோய் வராமல் தடுப்பதோடு மட்டுமல்லாது உடலில் மற்ற நோய்கள் வராமலும் தடுக்க முடியும்.

2. சரிவிகித உணவு

கார்போஹைட்ரேட் (மாவுப்பொருட்கள்)

கார்போஹைட்ரேட் என்பது சர்க்கரையின் கூட்டுக் கலவையாகும். சில வகையான மாவு பொருட்கள் உடலுக்கு அதிக ஆற்றலையும், இரத்தத்தில் சர்க்கரையின் அளவை நீண்ட நேரம் சீராக வைப்பதற்கும் உதவுகிறது.
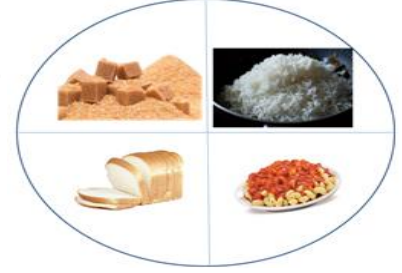
எ.கா.

- ✓ பிரவுன்ரைஸ்
- ✓ ஓட்ஸ்
- ✓ சிறு தானியங்கள்

மேலும் ஒரு சில வகையான மாவு பொருட்கள் இரத்தத்தில் சர்க்கரையின் அளவையும், உடல் பருமனையும் அதிகரிக்கிறது. இதனால் நீரிழிவு நோய் இல்லாதவர்களுக்கும் நீரிழிவு நோய் வர வாய்ப்புள்ளது. அதனால் இவ்வகையான உணவுப்பொருட்களை நாம் அன்றாட வாழ்வில் குறைவாக உட்கொண்டால் நமக்கு நீரிழிவு நோய் வராது.

எ.கா.

- ✓ அனைத்து பழங்கள்
- ✓ கிழங்கு வகைகள் மற்றும் பால் சார்ந்த உணவுகள்
- ✓ வெள்ளை அரிசி
- ✓ வெள்ளை ரொட்டி
- ✓ வெள்ளை சர்க்கரை
- ✓ பாஸ்தா

நார்சத்து

நார்சத்து நிறைந்த உணவுகளை உட்கொள்ளுவதால் இரத்தத்தில் சர்க்கரையின் அளவு கட்டுப்படுத்தப்படுகிறது. ஏனென்றால், உணவுகளை இந்த வகை உணவுகளை வயிற்றில் நீண்ட நேரம் தக்க வைத்துக் கொள்வதோடு மட்டுமல்லாமல் எளிதில் செரிமானத்திற்கும் உதவுகிறது. ஆகவே நார்ச்சத்து நிறைந்த உணவுகளை அதிகமாக உட்கொள்ள வேண்டும்.

நார்ச்சத்து நிறைந்த உணவுப் பொருட்களான:

எ.கா.

- ✓ பார்லி
- ✓ ஓட்ஸ்
- ✓ பீன்ஸ்
- ✓ பருப்பு வகைகள்
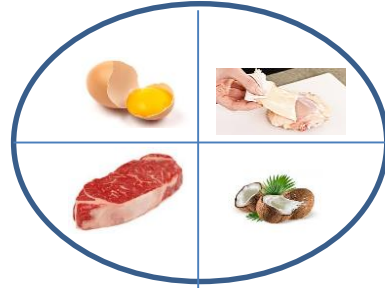- ✓ மட்டை அரிசி

கொழுப்புச் சத்து

கொழுப்புச் சத்து என்பது நமது உணவில் அன்றாடம் பயன்படுத்தக்கூடிய ஒரு உணவுப் பொருள் ஆகும். இது நமது உடலுக்கு ஆற்றலை கொடுக்கின்றது.

சில வகையான கொழுப்புச் சத்து நிறைந்த உணவுப் பொருட்களை அதிகமாக எடுத்துக் கொள்ளும் போது சர்க்கரையின் அளவில் மாற்றங்களை உருவாக்குகிறது. இதனால் நீரிழிவு நோய் இல்லாதவர்களுக்கும் நீரிழிவு நோய் வர வாய்ப்புள்ளது.

இந்த வகையான உணவுப்பொருட்களை நாம் அன்றாட வாழ்வில் குறைவாக உட்கொண்டால் நீரிழிவு நோய் வருவதை தடுக்கலாம்.

எ.கா.

- ✓ முட்டையின் மஞ்சள் கரு
- ✓ இறைச்சி
- ✓ கோழியின் தோல்
- ✓ பாம் ஆயில்
- ✓ தேங்காய்
- ✓ கீரிம்
- ✓ வெண்ணெய்

மேலும் சில வகையான கொழுப்புச் சத்துகள் (ஓமேகா-3 நிறைந்த உணவுப்பொருட்கள்) அதிகமாக எடுத்துக் கொண்டாலும் நமது உடலுக்கு எந்த விதமான தீங்கையும் விளைவிப்பதில்லை மாறாக செல்களில் இன்சுலின் பயன்பாட்டை அதிகரிப்பதற்கும் உடலின் எடையை சீராக வைத்துக் கொள்வதற்கும் உதவுகிறது.

எ.கா.

- ✓ ஆலிவ் ஆயில்
- ✓ சோள எண்ணெய்
- ✓ மீன் எண்ணெய்
- ✓ வாதுமை கொட்டை
- ✓ பூசணி விதை
- ✓ மத்தி மீன்.

புரத சத்து

புரத சத்தானது இரத்தத்தில் உள்ள சர்க்கரையின் அளவை அதிகரிக்காமல் தேவையான அளவு கலோரிகளை நமக்கு தருகின்றது. மேலும் இவை கார்போஹைட்ரேட் கொழுப்பை விட உடலுக்கு நன்மை தருவதில் முக்கிய பங்கு வகிக்கிறது.

புரத சத்து நிறைந்த உணவுகளை எடுத்துக் கொள்ளுவதால் நமது உடலில் புரதம் குளுக்கோசாக மாறி உடலுக்கு நல்ல ஆற்றலை கொடுக்கிறது. ஆகவே இந்த வகையான உணவுப் பொருட்களை அதிகமாக எடுத்துக் கொண்டாலும் நமக்கு எந்தவொரு பின் விளைவுகளும் வராது.

எ.கா.

- ✓ முட்டையின் வெள்ளைக்கரு
- ✓ கோழியின் நெஞ்சுக்கறி
- ✓ பருப்பு வகைகள்
- ✓ ப்ரோக்கோலி மற்றும் மீன்.

வைட்டமின் மற்றும் மினரல்

நுண்ணூட்டப்பட்ட வைட்டமின்கள் மற்றும் மினரல்கள் நமது உடலுக்கு தேவைப்படுகிறது. இதில் ஒரு சில வைட்டமின்கள் மற்றும் மினரல்கள் நிறைந்த உணவுப்பொருட்களை எடுத்துக் கொள்வதன் மூலம் நீரிழிவு நோய் வராமல் தடுக்கலாம்.

இவற்றில் வைட்டமின் இ, மக்னீசியம், குரோமியம், முக்கிய பங்கு வகிக்கிறது.

வைட்டமின் 'இ' ஆனது கணையத்தில் உள்ள பீட்டா செல்களுக்கு ஆற்றலை கொடுத்து இன்சுலின் உற்பத்தியை அதிகரிக்கிறது. இதனால் இரத்த சர்க்கரையின் அளவு கட்டுப்படுத்தப்படுகிறது.

மக்னீசியம் மற்றும் குரோமியம் உடலில் உள்ள திசுக்கள் குளுக்கோசை உபயோகப்படுத்துவதில் முக்கிய பங்கு வகிக்கிறது. இதன் மூலமாக நமக்கு இரத்த சர்க்கரையின் அளவு கட்டுப்படுத்தப்பட்டு நீரிழிவு நோய் வருவதை தடுக்கிறது.

எ.கா.

- ✓ வெண்ணெய் பழம் (Avacoda)
- ✓ சூரிய காந்தி விதைகள்
- ✓ மிளகு,

- ✓ வெங்காயம்
- ✓ அனைத்து வகையான கீரைகள்
- ✓ கோதுமை பிரட்
- ✓ இதர வைட்டமின் நிறைந்த உணவுப் பொருட்கள்
- ✓ கேரட்
- ✓ நெல்லிக்காய்

3. மன அழுத்தத்தை கட்டுப்படுத்தும் முறை

மன அழுத்தமானது உடல் மற்றும் மனம் சம்பந்தப்பட்டவை ஆகும். இந்த மன அழுத்தம் அதிகமாக உடலில் இருப்பதால் தேவையான ஆற்றல் கிடைப்பதில்லை. மேலும் மனஅழுத்தத்தை தூண்டும் ஹார்மோன்களான (அட்ரீனலின், கார்டிசோல்) இவை இரண்டும் இன்சுலின் செயல்பாட்டை பாதிக்கிறது. ஆகவே உடலில் இன்சுலின் எதிர்ப்பு ஏற்பட்டு நீரிழிவு நோய் உருவாகிறது.

மன அழுத்தத்தை குறைப்பதற்கான வழி முறை

- ✓ உடற்பயிற்சி செய்தல்
- ✓ நண்பர்களுடன் மகிழ்ச்சியாக உரையாடுதல்
- ✓ மெல்லிய இசை கேட்டல்
- ✓ தியானம்
- ✓ பிரார்த்தனை

4. மது அருந்துதல் மற்றும் புகைபிடித்தலை தவிர்த்தல்

மதுவில் அதிக கலோரி இருப்பதால் இரத்தத்தில் சர்க்கரையின் அளவு அதிகரிக்கிறது. மேலும் மதுவானது கணையத்தில் அழற்சியை ஏற்படுத்துகிறது. ஆகவே மது அருந்துவதை முற்றிலுமாக தவிர்த்தால் நமக்கு நீரிழிவு நோய் வராது.

அதிகமாக புகைபிடிப்பவர்களுக்கு இரத்த சர்க்கரையின் அளவு அதிகரிக்கப்பட்டு இன்சுலின் எதிர்ப்பு ஏற்படுகிறது. இதன் காரணமாக நீரிழிவு நோய் வரும். ஆகவே புகைபிடித்தலை முற்றிலுமாக தவிர்க்க வேண்டும்.

5. இரத்த சர்க்கரையின் அளவை பரிசோதித்தல் மற்றும் கண்காணித்தல்

நீரிழிவு நோய் வருவதற்கான மேற்கண்ட அறிகுறிகள் ஏதேனும் தென்பட்டால் உடனடியாக மருத்துவரை ஆலோசித்து கீழ்க்கண்ட இரத்தப் பரிசோதனைகளை மேற்கொள்ள வேண்டும். இதனால் நீரிழிவு நோய் வருவதை முன்கூட்டியே தடுக்கலாம்.

அவைகளாவன

- சாப்பிடுவதற்கு முன் இரத்தத்தில் உள்ள சர்க்கரையின் அளவை கண்டறிதல்
- சாப்பிடுவதற்கு பின் இரத்தத்தில் உள்ள சர்க்கரையின் அளவை கண்டறிதல்
- HBAIC (கிளைக்கேட்டட் ஹீமோகுளோபின்)
- OGT (Oral Glucose Tolerance) குளுக்கோஸ் டாலரன்ஸ் பரிசோதனை
- சிறுநீரகத்தில் சர்க்கரையின் அளவை கண்டறிதல்

I. சாப்பிடுவதற்கு முன் இரத்தத்தில் உள்ள சர்க்கரையின் அளவை கண்டறிதல்

குறைந்த பட்சமாக 8 மணி நேரத்திற்கு மேல் உணவு அருந்தாமல் இருக்கும் போது இரத்தத்தில் சர்க்கரையின் அளவு துல்லியமாக கண்டறியப்படுகிறது. ஆகவே காலையில் உணவு உண்பதற்கு முன்பாகவே இரத்தப் பரிசோதனையை மேற்கொள்ள வேண்டும். இவற்றின் சராசரியான சர்க்கரையின் அளவு <110 மி.கி / டெசி.லி. நீரிழிவு நோய் வர வாய்ப்பு உள்ளவர்களின் இரத்த சர்க்கரையின் அளவு 110 மி.லி கிராமுக்கு அதிகமாக இருக்க வேண்டும்.

II. சாப்பிடுவதற்கு பின் இரத்தத்தில் உள்ள சர்க்கரையின் அளவை கண்டறிதல் (PPBS)

குறைந்த பட்சமாக காலையில் உணவு அருந்திய பிறகு இரண்டு மணி நேரம் கழித்து இரத்தத்தில் உள்ள சர்க்கரையின் அளவை கண்டறிய வேண்டும்.

இவற்றின் சராசரி அளவு 140 – 200 மி.கி / டெசி.லி.

இவ்வகையான இரத்த சர்க்கரையின் அளவு 200 மி.கி / டெசி.லிக்கு அதிகமாக இருந்தால் அவர்கள் நீரிழிவு நோய் வர அதிக வாய்ப்புகள் உள்ளவர்களாவர்.

III. HBAIC (கிளைக்கேட்டட் ஹீமோகுளோபின்) என்னும் இரத்த பரிசோதனை

HBAIC என்னும் இரத்த பரிசோதனையின் மூலமாக தமது உடம்பில் நான்கு மாதங்களுக்குள்ளான இரத்த சர்க்கரையின் அளவை துல்லியமாக கண்டறிய உதவும் ஒரு சோதனையாகும். கிளைக்கேட்டட் என்பது உடலில் உள்ள ஆக்ஸிஜன் நிறைந்த இரத்த சிவப்பணுக்களில் உள்ள ஒரு புரதம் ஆகும். இவை இரத்த சர்க்கரையுடன் இணைந்து கிளைக்கேட்டட் ஹீமோகுளோபின் எனப்படுகிறது.

மனித உடலில் உள்ள இரத்த சிவப்பணுக்கள் 8 முதல் 16 வாரங்களில் புதியதாக உருவாகிறது. ஆதலால் இப்பரிசோதனை மேற்கொள்ளப்படுகிறது.

HBAIC	IFCC	என்ரிசல்ட்
5.6% க்கு கீழ்	38க்கு கீழ்	நீரிழிவு நோய் இல்லை
5.6% - 7.0%	38-53	நல்ல கட்டுபாடு
7.1 – 8.0%	54-64	நீரிழிவு நோய் சுமாரான கட்டுப்பாடு
8.0 க்கு மேல்	64 க்கு மேல்	நீரிழிவு நோய் கட்டுப்பாடு இல்லை.

IV. குளூக்கோஸ், டாலரன்ஸ் பரிசோதனை

இந்த பரிசோதனையின் மூலம் உடலில் உள்ள இரத்த சர்க்கரையின் அளவை கண்டறியலாம். முதலில் சாப்பிடும் முன் இரத்த சர்க்கரையின் அளவு கண்டறியப்பட்டு அதன் பிறகு 8 அவுன்ஸ் குளூக்கோஸ் கலந்த நீர் கொடுக்கப்படும்.

அதன்பின் இரத்த சர்க்கரையின் அளவு கண்டறியப்படும்.

V. சிறுநீரகத்தில் சர்க்கரையின் அளவை கண்டறிதல்.

இப்பரிசோதனை மூலம் சிறுநீரகத்தில் உள்ள சர்க்கரையின் அளவு கண்டறியப்படுகிறது. ஏனெனில் சிறுநீரில் சர்க்கரையின் அளவு அதிகமாக இருந்தால் அவர்களுக்கு நீரிழிவு நோய் வர வாய்ப்பு உள்ளவர்கள் ஆவர்.

VI. நமது உடலின் எடையை உயரத்திற்கு ஏற்றவாறு வைத்துக் கொள்ள வேண்டும். அதனை BMI (Body Mass Index) என்னும் அட்டவணை மூலமாக உடல் பருமனை கண்டறியலாம். அவ்வாறு அட்டவணையின் கீழ் உடல் உயரத்திற்கு ஏற்றவாறு உடல் பருமனானது இல்லையெனில் இரத்தத்தில் உள்ள கொழுப்பின் அளவை பரிசோதனை செய்து கொள்ள வேண்டும்.

உடல் பருமனை கண்டறிய உதவும் அட்டவணை

$$BMI = \frac{உடல்\ எடை\ கி.கி}{உடல்\ உயரம்\ மீ^2}$$

பி.எம்.ஐ	உடல் அளவு
18.5க் கீழ்	குறைந்த கட்டுப்பாடு
18.5 — 24.9	நல்ல கட்டுப்பாடு
25 — 29.9	அதிக உடல் எடை
30 மேல்	பருமனான உடல்

முடிவுரை

தற்போது உள்ள உலக நடைமுறையில் நீரிழிவு நோய் அதிக அளவில் உள்ளது. ஆகவே இதனை முன்பே வராமல் தடுப்பதற்கான வழிமுறைகளை மேற்கொள்வதன் மூலம் இந்நோயிலிருந்து பாதிக்கப்படாமல் வளமான வாழ்வை பெறலாம்.

"நீரிழிவு நோய் வருமுன் காப்போம்"
"வளமான வாழ்வு பெறுவோம்"

APPENDIX – II

CERTIFICATION OF ETHICAL COMMITTEE

RASS ACADEMY COLLEGE OF NURSING
Approved By Govt. of TNC & INC - Affiliated with Dr. M.G.R. Medical University

Date:10.07.2017

ETHICAL COMMITTEE

The following members of the ethical committee were present at the meeting held on 10.07.2017at 2.30 pm in RASS Academy college of Nursing, Poovanthi.

CHAIR PERSON

1. Dr.Muthuselvam,B.Sc, M.B.B.S , MS

   Professor of Surgery (Retired)

   Chief Surgical Consultant – Health Net Hospital, Madurai.

DEPUTY CHAIRMAN

2. PROF.MRS.H.UMMUL HAPIPA M.Sc (N)

   Principal, RASS Academy College of Nursing , Sivagangai -630611

MEMBER SECRETARY

3. PROF. MRS.VIJAYA KAMU M.Sc (N)

   Vice Principal, RASS Academy College of Nursing , Sivagangai -630611

MEMBERS

4. PROF.MRS KARTHIHA M.SC (N)

   HOD of Community Health Nursing,

   RASS Academy College of Nursing, Poovanthi, Sivagangai Dist 630611

5. PROF.MRS. M.VISALAKSHI ,M.SC (N),

   HOD of Medical Surgical Nursing,

   RASS Academy College of Nursing, Poovanthi, Sivagangai Dist 630611.

6. ASSO.PROF.MRS.K.N.SUDHA ,M.SC (N),

   HOD of obstetrical & Gynecological Nursing,

   RASS Academy College of Nursing, Poovanthi, Sivagangai Dist 630611.

7. ASSO.PROF.MS.M.NANCY FLOMINA M.SC(N),

   HOD of Psychiatric Nursing,

   RASS Academy College of Nursing, Poovanthi, Sivagangai Dist 630611.

RASS ACADEMY COLLEGE OF NURSING
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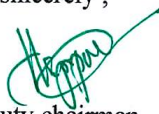
RESOLUTION

It is resolved to accept Mrs.M.VANMATHI to conduct an experimental study to assess the effectiveness of self instructional module on knowledge regarding prevention of diabetes mellitus among pre diabetes in Akilandapuram at sivagangai.

The institutional Ethics committee expects to be informed about the progress of the study. Any changes in protocol , patients information and ask to be provided a copy of the final report.

Yours sincerely,

Yours sincerely ,

Chair person
Ethics committee

Deputy chairman
Ethics committee

APPENDIX – III

PERMISSION LETTER FOR CONDUCTION OF STUDY

From
    Mrs. M.Vanmathi,
    Msc.,(N) II year student,
    RASS Academy college of Nursing,
    Poovanthi,
    Sivagangai District -630561

TO   Mr.Krishna kumar,
    26th ward councellor
    Akilandapuram
    Sivagangai District -630561

Respected sir,

Sub: To request permission for research study-Reg

I am Mrs. M.Vanmathi, doing Msc.,(Nursing) in RASS Academy college of Nursing Poovanthi,Sivagangai District, affiliated to the Tamilnadu Dr. MGR.Medical University, Chennai ...As part of my curriculum, I am conducting a research study on the topic:

A study to assess the effectiveness of self-instructional module on knowledge regarding prevention of diabetes mellitus among pre diabeties in 26th ward Akilandapuram, at Sivagangai District.

The purpose of this study to educate the prevention of diabetes mellitus for pre diabetic people. I request you to grant me permission to undergo data collection in your area.

Thanking you

Yours Faithfully,

K. கிருஷ்ணகுமார் MC
26வது வார்டு நகர்மன்ற உறுப்பினர்
உள்ளூர் திட்டக்குழு உறுப்பினர்
9B அகிலாண்டபுரம்
சிவகங்கை – 630 561
Cell: 98425 17733

PRINCIPAL
RASS ACADEMY COLLEGE
OF NURSING
POOVANTHI - 630 311

APPENDIX – IV

LIST OF EXPERTS CONSULTED FOR CONTENT VALIDITY

1. Prof.Mrs.UMMUL HAPIPA, M.Sc (N).,

PRINCIPAL,

RASS Academy College of Nursing,

Poovanthi, Sivagangai District-630561

2. Prof. Mrs.VISALATCHI, M.Sc., (N)

RASS Academy College of Nursing,

Poovanthi, Sivagangai District

3. Dr. KALAVATHI, MBBS.,

Medical Officer,

Urban Primary Health Center,

Sivagangai Dist-630 561

4. Prof.Mrs.PARVATHI, M.Sc., (N)

Ramachandra Naidu College of Nursing

Perumalpatti, Rajapalayam

Thirunelvel District.

5. Dr.VARADHARAJAN, M.Sc., M.Phil., M.Ed., Ph.d(Edn).,

Professor of Statistics

RASS Academy College of Nursing.

Poovanthi, Sivagangai District**.**

6. Associate Prof. Mrs. KAVITHA.Msc., (N).,

RASS Academy College of Nursing

Poovanthi Sivagangai District

7. Assist Prof.Mrs.KARPAGAM, M.Sc.(N).,

RASS Academy College of Nursing

Poovanthi.Sivagangai Dist

APPENDIX – V

PHOTOGRAPHIC EVIDENCE OF DATA COLLECTION