EFFECTIVENESS OF LADIES FINGER JUICE ON BLOOD GLUCOSE LEVEL AMONG ADULTS WITH TYPE 2 DIABETES MELLITUS IN VIEW OF PREPARING A PAMPHLET ON HYPOGLYCEMIA IN NANCHIYAMPALAYAM AT DHARAPURAM.

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

2014-2016

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HYPOGLYCEMIA IN NANCHIYAMPALAYAM
AT DHARAPURAM.

APPROVED BY DISSERTATION COMMITTEE ON: _____

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IN NANCHIYAMPALAYAM

AT DHARAPURAM.

Certified Bonafide Project work

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"The lord will fulfill his purpose for me; your love,O Lord, endures forever"

Psalm 138:8

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ABSTRACT

Diabetes Mellitus can manifest due to resistance of peripheral receptors to insulin or increased endogenous glucose production by the liver and is clinically characterized by hyperglycemia. Hyperglycemia is caused by inherited or acquired deficiency in production of insulin by the pancreas or by the ineffectiveness of the insulin production. Type 2 diabetes mellitus is the one of the type of diabetes mellitus. Type 2 diabetes mellitus is results from a decreased sensitivity to insulin resistance or from a decreased amount of insulin production.

This study was aimed to assess the effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram.

The research approach used for the study was evaluative approach. The quasi experimental non equivalent control group pretest, posttest design was used for this study. The conceptual framework of the study was based on the "Wiedenbach's helping art of clinical nursing theory''. Purposive sampling technique was used to select 60 samples, out of which 30 were in experimental group and 30 were in control group. The first 2 days morning, pretest fasting blood glucose level was checked by using glucometer and during the daytime demographic variables were collected from the experimental group. On the 2nd day evening the investigator had prepared the 250ml of ladies finger juice for each sample in experimental group. Instructions were given to the samples in experimental group regarding measures to be taken in hypoglycemia. From the third day morning onwards, the experimental group were asked to consume the ladies finger juice before breakfast for 15 days. Every day morning, the experimental group drank the ladies finger juice in empty stomach under the supervision of the investigator. During day time knowledge on hypoglycemia was assessed by using structured interview questionnaire for the experimental

group. It took 40-45 minutes for each sample. The posttest fasting blood glucose level was checked on 7th and 16th day after intervention for the experimental group. After the posttest, pamphlet on hypoglycemia was given to the experimental group. From next day onwards, for the control group, pretest fasting blood samples were taken and demographic variables were collected for 2 days. The first posttest fasting blood samples were taken on the 7th day. The 2nd posttest fasting blood samples were taken on the 16th day. During daytime the knowledge on hypoglycemia was assessed in control group. On the 16th day after taking the blood samples, the pamphlet on hypoglycemia was given to the control group also. Finally for all the 60 samples ladies finger seeds were given to grow it in their kitchen garden for their further use. The collected data were analyzed and tabulated by using descriptive and inferential statistics.

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The mean pretest score of blood glucose level was 178 (SD± 43.1) and mean posttest-I score of blood glucose level was 135 (SD±19.2) and posttest-II mean score of blood glucose level was 107 (SD ± 13.01) which showed that the mean posttest-I and posttest-II score was significantly lower than the mean pretest score in the experimental group. The paired't' value was 7.398 and 9.882 for posttest-I and posttest-II respectively which was significant at $p<0.05$ level of significance.

The mean posttest –I score of blood glucose level was 135(SD±19.2) in experimental group and mean score was 177 (SD±38.6) in control group. The mean difference was 42.The independent't' value was 5.617, which was significant at $p<0.05$ level of significance .The mean posttest –II score of blood glucose level was 107(SD±13.01) in experimental group and mean score is 176 (SD±41.09) in control group. The mean difference was 69.The independent't' value was 8.843, which was significant at $p<0.05$ level which revealed that the ladies finger juice was effective in reducing blood glucose level among type 2 diabetes mellitus. There was significant association found between posttest

level of blood glucose and sex, education and dietary pattern in experimental group.

In experimental group, majority 21(70%) of adults had moderately adequate knowledge, 9(30%) of adults had inadequate knowledge regarding hypoglycemia. In control group majority 14(47%) of adults had moderately adequate knowledge, 16(53%) of adults had inadequate knowledge regarding hypoglycemia. The pamphlet on hypoglycemia was given both experimental group and control group.

The study findings revealed that ladies finger juice was beneficial and there was a significant reduction in blood glucose level among adults with type 2 diabetes mellitus.

CHAPTER – I

INTRODUCTION

"Every human being is an author of his own health"

-Hendry.,(2003)

BACKGROUND OF THE STUDY:

Good health is the fundamental right of every human being. Internal and external growth of a person is not possible without good health. Good health is essential to lead a quality and successful life.

Keshav Swarakar.,(2004)

Diseases linked with the way people live their life .Poor lifestyle choices, such as smoking, overuse of alcohol, poor diet, lack of physical activity and inadequate relief of chronic stress are key contributors in the development and progression of preventable chronic diseases, including obesity, diabetes mellitus, hypertension, cardiovascular disease and several types of cancer.

Wikipedia.,(2016)

Non communicable diseases (NCDs), also known as chronic diseases, are not passed from person to person. It has a long duration and generally slow progression. The 4 main types of non communicable diseases are cardiovascular diseases (like heart attacks and stroke), cancers, chronic respiratory diseases (such as chronic obstructed pulmonary disease and asthma) and diabetes. WHO said non communicable diseases were silent killers, had insidious onset disease is diabetes mellitus.

WHO.,(2015)

Diabetes mellitus is a group of metabolic diseases characterized by high blood sugar (glucose) levels, that result from defects in insulin secretion, or action, or both. Diabetes mellitus, commonly referred to as diabetes, was first identified as a disease associated with "sweet urine," and excessive muscle loss in the ancient world.

Elevated levels of blood glucose (hyperglycemia) lead to spillage of glucose into the urine, hence the term sweet urine.

Pallab Das Gupta .et al.,(2012)

Diabetes mellitus is classified as one of four different clinical states including type 1,type 2, gestational or other specific types of diabetes mellitus such as genetic defects, diseases of pancreas, endocrinopathies, drug or chemical induced, genetic syndromes associated with diabetes mellitus.

Joyce M.Black.,(2012)

Type 2 diabetes (formerly called non-insulin-dependent or adult-onset) results from the body's ineffective use of insulin. Type 2 diabetes comprises 90% of people with diabetes around the world, and is largely the result of excess body weight and physical inactivity.

Diabetes Care., (2015)

Type 2 diabetes is the most common form of diabetes, and most individuals with the disease are adults. However, children and adolescents can develop type 2 diabetes too, particularly if they are overweight and have a history of type 2 diabetes in their family **.**

Thomson Gale.,(2006)

Epidemic of type 2 diabetes found mainly in obese middle-aged persons are sweeping the globe which is associated with decreasing level of activity and mounting tension.

Dr. JL .Agarwal .,(2016)

Type 2 diabetes mellitus risk factor are heredity, obesity, habitual physical inactivity, and racial predisposition (as in African, American, Hispanic, Native American population)

Joyce.M.Black.,(2012)

Symptoms of diabetes include three P's such as polyuria, polydipsia and polyphagia, fatigue and weakness, sudden vision changes, numbness in hands or feet, dry skin, skin lesions or wounds that are slow to heal and recurrent infections

Brunner.,(2009)

The preferred method of diagnosing diabetes is the fasting plasma glucose test (FPG). The FPG measures blood glucose level after person have fasted (not eaten anything) for 10 to 12 hours. Normal fasting blood glucose is between 70 and 100 mg/dl for people. On occasion, an oral glucose tolerance test may aid in the diagnosis of diabetes or an earlier abnormality that may become diabetes - called impaired glucose tolerance. Another test, the A1C test, measures average percentage of glycated haemoglobin, or HbA1c, in the blood. This test tells about blood glucose control for the past 2 to 3 months.

Cleveland Clinic.,(2013)

When considering appropriate pharmacologic therapy, a major factor to consider is whether the patient is insulin deficient, insulin resistant, or both. Early initiation of pharmacologic therapy is associated with improved glycemic control and reduced long-term complications in type 2 diabetes. Drug classes used for the treatment of type 2 diabetes such as, biguanides, sulfonylurea, meglitinide derivatives, alpha-glucosidase inhibitors, thiazolidinediones (TZDs),glucagon like peptide–1 (GLP-1) agonists and insulins, dopamine agonists

Romesh Khardori,.,(2015)

The common side effects of anti diabetic medications can cause effect in diabetic people such as diarrhoea ,increased weight, decreased LDL cholesterol levels, risk of mild or moderate hypoglycemia.

Medscape.,(2016)

Allopathic drugs, Insulin injections and all other medicines available for diabetes can only control the level of sugar in blood stream and moreover they have enormous side effects and lead to numerous allergies and cause complications. Using non-pharmacological therapy for diabetes can be controlled and maintained without any side effect.

D'Arcy Little.,(2002)

Diabetes treatment can include many elements, including traditional medications, alternative medicine, and natural or home remedies. Alternative therapies encompass a variety of disciplines that include everything from diet and exercise to mental conditioning and lifestyle changes. Examples of alternative treatments include acupuncture, guided imagery, chiropractic treatments, yoga, hypnosis, biofeedback, aromatherapy, relaxation exercises, herbal remedies, massage, and many others.

WebMD.,(2016)

Home remedies for diabetes mellitus such as bitter gourd ,bengal gram, fenugreek (methi) juice, gooseberry and orange,5 mango leaves plus 1 glass of water, grapefruit, curry leaves, aloe vera ,Honey with turmeric powder, jambul fruit (jamun) leaves, overnight drenched almond and ginseng, leaves of neem, apple juice, garlic, onion, soybean, string bean pod tea and ladies finger.

Dr.Vivek Andrews.,(2009)

Many patients try complementary/alternative medicine for diabetes control. Numerous herbal remedies, non-herbal remedies, and other approaches have been tested, and some seem to have anti-diabetic effects. Lady finger is one of the good herbal remedy for diabetics.

Bull.Y.,(2012)

The edible green fruits or pods of Abelmoschus esculentus L (vendi/lady's finger/okra) are popular all over the world for possessing valuable nutrients including fibers, vitamins, minerals, proteins and carbohydrates, nearly half of which is soluble fiber in the form of gums and pectins. It is believed that it is useful in the treatment of inflammatory disorders, constipation, and retention of urine, lowering blood cholesterol and blood glucose level.

Alam. et al., (2007)

Okra (Ladies finger) helps to stabilize blood sugar by curbing the rate at which sugar is absorbed from the intestinal tract. Okra is a good choice for people with diabetes, as it has a low glycemic index of about 20. The okra helped to reduce the absorption of glucose, which in turn reduced blood sugar levels.

Sylvia Zook.,(2011)

Major problem with diabetes is that if it is poorly controlled it leads to increase in complications associated with diabetes. Diabetes increases the risk of various microvascular and macrovascular diseases such as coronary artery disease, stroke, blindness, kidney failure, and foot amputation leading to increased morbidity.

Kanchana Dussa, et al.,(2015)

In recognition of this growing problem, the Government of India has taken the initiative to formulate a National Diabetes Control Programme during the seventh five year plan in 1987 in some districts of Tamil Nadu, Jammu and Kashmir and Karnataka. The objectives of the programme were prevention of diabetes through identification of high-risk subjects and early intervention in the form of health education; early diagnosis of disease and appropriate treatment; reduction of morbidity and mortality with reference to the high-risk group.

World diabetes foundation.,(2014)

Department of Health of Bangladesh Red Crescent Society in collaboration with Taiwan Red Cross has been implementing a programme on prevention of Non Communicable Diseases (NCD).Focus of the program is on prevention of these diseases. The objectives of the programme were train MCH staff (Midwives, Assist. Midwives and Community Health promoters) on diabetes and Hypertension and its prevention (there is a deficiency of knowledge about these diseases and their prevention in health staff and rural communities), health education of the catchment population on diet, nutrition and prevention of Diabetes Mellitus and Hypertension and diagnose cases of Diabetes Mellitus and Hypertension and refer them to Physicians.

Hasan.,(2013)

The world health day is a global health awareness day celebrated every year on 7th April, under the sponsorship of the WHO. The world health day 2016 theme is "Beat Diabetes".The main goals of the world health day 2016 campaign are to increase awareness about the rise in diabetes, and its staggering burden and consequences, in particular with low-and middle – income countries; and to trigger a set of specific, effective and affordable actions to tackle diabetes. These are including steps to prevent diabetes and diagnose, treat and care for people with diabetes.

Health Action.,(2016)

India is today facing an epidemic of diabetes which could affect not only the individuals and family but also the health and economy of the nation. Prevention of diabetes should be a priority for the health program of the nation. A joint effort by government, non-governmental organizations (NGOs) and the public is needed to stem the tide of the diabetes epidemic currently sweeping across India.

S. Sandeep.et al.,(2008)

Community health nurses are health care providers who actively involved in prevention and early detection of diabetes and its complications. The nurses role could be in health care, health, community education, health systems management, patient care and improving the quality of life.

M. Sanjari .et al.,(2012)

NEED FOR THE STUDY

Diabetes is part of a larger global epidemic of non- communicable diseases. It has become a major public health challenge globally.

Bharti Mehta.,(2012)

Great efforts have been made by developed countries to control infectious diseases, but non-communicable diseases have not received much attention. Diabetes mellitus is one of the non-communicable diseases which have become a major global health problem.

Indian Journal Of Community Medicine.,(2010)

Diabetes is an "Iceberg" disease. Although there is an increase in both prevalence and incidence of Non-insulin dependent diabetes globally, it have been especially dramatic in newly industrialized countries and in developing countries. Currently the number of cases of diabetes worldwide is estimated to be around 230 million. Among these the greatest number of cases is being reported in India and china 36 million and 24 million respectively

International Diabetes Federation.,Atlas .,(2012)

Recently compiled data showed that approximately 150 million people had diabetes mellitus worldwide, and that this number may well double by the year 2025. Much of this increase will occur in developing countries and will be due to population growth, ageing, unhealthy diets, obesity and sedentary lifestyles.

WHO.,(2016)

By 2025, while most people with diabetes in developed countries will be aged 65 years or more, in developing countries most will be in the 45-64 year age bracket and affected in their most productive years.

WHO.,(2016)

WHO has estimated rise in the prevalence of diabetes by 2030 from 2.8% to 4.4% in all age groups worldwide. The total number rising from 171 million to 366 million and the estimated prevalence is higher in men than in women.

Kiran.N.Hegade.,(2015)

According to CDC, diabetes mellitus affects 25.8 million people or 8.3 percent of the U.S population. Among the 26 million individuals living with diabetes, it was estimated that 95 percent had type 2 diabetes.

Centres For Disease Control And Prevention.,(2014)

In Asia, prevalence of diabetes is high and it has been estimated that 20% of the current global diabetic population resides in South- East Asia.

Sanjay Kumar Gupta.,(2010)

Type 2 diabetes was responsible for 85-95% of all diabetes in high-income countries but Type 2 diabetes accounts for well over 90% of diabetes in Sub-Saharan Africa even in other low- and middle-income countries and population prevalence proportions ranged from 1% in rural Uganda to 12% in urban Kenya.

Haftu B Gebru.et al.,(2014)

Based on the International Diabetes Federation (IDF) the 2012 report, the number of cases of diabetes in Ethiopia to be estimated about 1.4 million in 2011.

Haftu B Gebru.et al.,(2014)

Japan is one of the 21 countries and territories of the IDF western pacific (WP) region. There were 7.2 million cases of diabetes in Japan in the year of 2015.

International Diabates Federation.,(2015)

In Middle East, internationally published data on national estimation of type 2 diabetes prevalence are spare. In Iran a prevalence of 7.7% in people younger than 65 years is reported.

Gita Shafiee.et al.,(2012)

In England alone, over two million people had been diagnosed with type 2 diabetes and it was estimated there are an additional 667,000 undiagnosed cases.

Forouhi et al., (2006)

In Pakistan 9.5% of the urban and 9.4% of the rural population suffer from type 2 diabetes

Naheed Gul.,(2010)

India , China and United States of America are the "top three" countries having the highest number of diabetes in the year 2025.India has a dubious distinction of being the country with highest population of diabetics.

Shanthi.et al.,(2013)

India is also going through a time-bound of chronic non communicable diseases, epidemic at present with over 60% of the deaths in the country already attributable to non communicable diseases, particularly the biggest killers, namely diabetes mellitus.

Dr. Damodar Bachani.,(2006)

According to latest estimates by the International Diabetes Federation (IDF), India leads the world in the number of diabetic subjects in India was around 41 million in 2006 and this was set to rise to 70 million by the year 2025.

S. Sandeep et al .,(2008)

The global burden of type 2 diabetes for 2010 would be 285 million people which is projected to increase to 438 million in 2030, a 65% increase. Similarly, for India this increase estimated to be 58% from 51 million people in 2010 to 87 million in 2030.

Snehalatha.et al.,(2014)

At the turn of this century type 2 diabetes in adult urban Indian populations varies from a low of 5.4% in a northern state to a high of 12.3—15.5% in Chennai, South India, and 12.3—16.8% in Jaipur, Central India.

Rajeeva Gupta.,(2007)

The prevalence of type 2 diabetes in rural populations is one-quarter that of urban population for India and other Indian sub-continent countries such as Bangladesh, Nepal, Bhutan, and Sri Lanka. Preliminary results from a large community study conducted by the Indian Council of Medical research (ICMR) revealed that a lower proportion of the population is affected in states of Northern India (Chandigarh 0.12 million, Jharkhand 0.96 million) as compared to Maharashtra (9.2 million) and Tamil Nadu (4.8 million).

Australas Med J.,(2014)

In New Delhi , the Birth Cohort study, which reported an annual incidence of type 2 diabetes is 1.0% for males and 0.5 % for females, even though this population was in the 4th decade of life.

Nikhil Tandon.et,al.,(2014)

A study from Jaipur reported an age-standardized prevalence of 8.6% in 2003.A recent study from rural Maharashtra showed a high prevalence of 9.3%.The Amrita Diabetes and Endocrine Population Survey (ADEPS), a community based cross-sectional survey done in urban areas of Ernakulam district in Kerala has revealed a very high prevalence of 19.5%.The ADEPS has revealed the highest prevalence of diabetes in a population in India.

Parivallal T.,(2007)

A study done in southern Kerala looked at the variations in the prevalence of type 2 diabetes among different geographic divisions within a region. The prevalence of diabetes was the highest in the urban (12.4%) areas, followed by the midland (8.1%), highland (5.8%) and coastal division (2.5%).

Joseph A.et,al.,(2000)

The Indian Council of Medical Research-India Diabetes (ICMR-INDIAB) Study, which was carried out in three states (Tamil Nadu, Maharashtra, and Jharkhand) and one union territory (Chandigarh), reported a varied prevalence of diabetes: 10.4% in Tamil Nadu, 8.4% in Maharashtra, 5.3% in Jharkhand, and 13.6% in Chandigarh.

Tarun Sharma.et,al.,(2014)

The prevalence of diabetes among the adult male residents in Dakshina Karnataka District in the year 2010 was found to be 57% whereas that of females was 43%.Around 3.2 million deaths every year are attributable to complications of diabetes: six deaths every minute. India tops the list of 10 countries in numbers of suffers**.**

Siddartha.et,al.,(2010)

The Chennai Urban Population Study (CUPS) was done to assess the effect of socioeconomic status on the prevalence of type 2 diabetes and related abnormalities. The study involved two residential areas in Chennai representing

the lower and middle income group. The overall prevalence of diabetes was 12% in the population aged above 20 -40years. The age standardised prevalence was 12.4% in the middle income group compared to 6.4% in the lower income group.

Premalatha.et,al.,(2001)

A recent study done on young adults (aged 26-32 years) in Vellore, Tamil Nadu has reported that the prevalence of type 2 diabetes was 3.7% in urban areas and 2.1% in rural areas. The prevalence of impaired glucose tolerance (IGT) was 18.9% in the urban and 14.3% in rural subjects revealing a large pool of pre diabetic subjects in the young age group on the averge of getting converted to diabetes.

V.Mohan.et,al.,(2008)

Kassaian N.et,al.,(2009) conducted study on Effect of ladies finger juice on blood glucose and lipid profiles in type 2 diabetic patients. This study was undertaken to evaluate the hypoglycemic and hypolipidemic effects of ladies finger juice in type 2 diabetic patients. In a clinical trial study, 24 type 2 diabetic patients were placed on ladies finger juice for 4 weeks. Weight, FBS, HbA(1)C, total cholesterol, LDL, HDL and food record were measured before and after the study. The differences observed in food records, BMI and serum variables were analyzed using paired-t-test and $P < or = 0.05$ was considered as significant. Findings showed that FBS, TG and VLDL-C decreased significantly (25 %, 30 % and 30.6 % respectively) after taking ladies finger juice. This study shows that ladies finger juice can be used as an adjuvant in the control of type 2 diabetes mellitus .

During the community posting, the investigator observed that many adults were having type 2 diabetes mellitus. The adults are taking anti-diabetic medications relatively at high cost. The investigator felt that the use of home remedies such as ladies finger would be of low cost, economical and acceptable

to the people in the reduction of blood glucose level. This probed the investigator to conduct a study on use of ladies finger juice in reducing blood glucose level.

STATEMENT OF THE PROBLEM:

A study to assess the effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus in view of preparing a pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram**.**

OBJECTIVES:

1. To assess the pretest and posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

2. To compare the pretest and posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

3. To find the effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus between experimental and control group.

4. To assess the knowledge of hypoglycemia among adults with type 2 diabetes mellitus in experimental and control group.

5. To find out the association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.

OPERATIONAL DEFINITION:

Effectiveness:

Effectiveness means producing an intended result.

Soanes.C.,(2001)

In this study, effectiveness refers to determining the extent to which intake of ladies finger juice had achieved the desired effect by significantly reducing the level of blood glucose among adults with type 2 diabetes mellitus.

Ladies Finger Juice:

Take two numbers of ladies finger and remove or cut both ends of each piece. Also put a small cut in the middle and put these two pieces in 250ml of water. Cover the glass and keep it at room temperature during night at least for 8 hours. Early morning, in empty stomach simply remove the two pieces of ladies finger from the glass and drink the water.

Herbs corner.,(2014)

In this study it refers to the ladies finger juice prepared by soaking 2 ladies finger in 250ml of water overnight and consumed by the adults with type 2 diabetes mellitus in the early morning before breakfast for 15 days.

Blood Glucose:

The blood glucose refers to sugar that is transported through the blood stream by supplying energy to all the cells in our bodies. The normal range for blood glucose is 70 to 100 mg/dl.

Christian Nordquist.,(2014)

In this study it refers to the concentration of glucose in the blood as measured by ACCU-CHEK Active glucometer (strip no is 381) in a fasting state. The fasting blood sugar range is above 126 mg/dl.

Adults:

Adult is defined as grown up or something intended for a mature audience or of a mature nature.

The adult is classified into

➢ Early adulthood:20-35 years

➢ Middle adulthood: 35-65 years

➢ Late adulthood:65 years

WHO.,(2011)

In this study it refers to adults between the age of 40 to 60 years.

Type 2 diabetes mellitus:

Type 2 diabetes mellitus which results from decreased sensitivity to insulin (called insulin resistance) and impaired beta cell functioning resulting in decreased insulin production.

Quinn.,(2001)

In this study it refers to the adults who are diagnosed as type 2 diabetes mellitus with fasting blood sugar greater than 126mg/dl.

Hypoglycemia:

Hypoglycemia is defined as blood sugar below 70 milligrams per deciliter (mg/dL).

Mayo Clinic.,(2008)

In this study, it refers to the understanding level of knowledge on hypoglycemia, which is measured by knowledge score and issue of pamphlet on hypoglycemia to both experimental and control group.

HYPOTHESES:

H₁ : The mean posttest level of blood glucose is significantly lower than the mean pretest level of blood glucose in experimental group.

H₂ : The mean posttest level of blood glucose in the experimental group is significantly lower than the mean post test level of blood glucose in control group.

H₃ : There will be a significant association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.

ASSUMPTION:

- Adults may have poor diet pattern which is one of the risk factor to increase the blood glucose level.

- Nurses have the responsibility to create awareness among adults with type 2 diabetes mellitus.

- Adults with type 2 diabetes mellitus may have some knowledge regarding hypoglycemia and its management.

DELIMITATION:

This study is delimited to

- Data collection period was five weeks

- Sample size was 60.

PROJECTED OUTCOME:

The study will help the adults to understand the importance of ladies finger juice which will reduce the blood glucose level. Long term practice of taking ladies finger juice will help to reduce the complications of type 2 diabetes mellitus, and improve their quality of life, ultimately this may increase the life span of diabetes mellitus persons.

(ii) CONCEPTUAL FRAMEWORK

Conceptual framework helps to express abstract ideas in a more reality, understandable, and precise form of the original conceptualization. The conceptual framework for this study was adapted from **Wiedenbach's helping art of clinical nursing theory (1969).**

According to Ernestine Wiedenbach's nursing is nurturing and caring for someone in a motherly fashion. Nursing is a helping service that is rendered with compassion, skill and understanding to those in need for care, counsel and confidence in the area of health. The practice of nursing comprises a wide variety of service each directed towards the attainment of one of its three components.

Step I: Identification of a need for help

Step II: Ministration of help needed.

Step III: Validation that need for help was met

CENTRAL PURPOSE

According to the theorist the nurse's central purpose defines the quality of health. The nurse desires to effect or sustain the patient and specifies what they recognizes to be their special responsibility in caring for the patient.

In this study, the central purpose is to reduce the level of blood glucose and improve the level of knowledge regarding hypoglycemia among adult with type 2 diabetes mellitus.

STEP I: IDENTIFICATION OF A NEED FOR HELP

According to the therapist within the identification component there are four distinct steps. First, nurse observes the patient, looking for an inconsistency between the expected behavior of the patient and the apparent behavior. Second, nurse attempts to clarify what the inconsistency means. Third, nurse determines the cause of the inconsistency. Finally, nurse validates with the patient that her help is needed.

In this study, the general information which comprises the age, sex, religion, education, occupation, family income, type of family, marital status, dietary pattern, exercise, family history of diabetes mellitus, treatment, duration of treatment of diabetes mellitus, frequent monitoring of blood glucose level and source of health information. The pre test blood glucose was monitored for two days and graded a uncontrolled diabetes mellitus, controlled diabetes mellitus, normal. Structured interview questionnaire were used to assess the knowledge regarding hypoglycemia and graded as adequate knowledge, moderately adequate knowledge, in adequate knowledge in both experimental and control group.

STEP II: MINISTRATION OF THE HELP NEEDED

According to the theorist, in ministering to the patient, the nurse may give advice or information, make referral, apply a comfort measures or carry out a therapeutic procedures. The nurse will need to identify the cause and if necessary make an adjustment in the plan of action.

Ministration of help needed has two components,

1.   PRESCRIPTION
2.   REALITIES

1. PRESCRIPTION

According to the theorist, a prescription is directive to activity. It specifies both the nature of action that will most likely lead to fulfillment of the nurse's central purpose that determines it.

In this study, prescription is plan of care to achieve the purpose which includes preparing the ladies finger juice for 15 days to the adult in the experimental group.

2. REALITIES

According to the theorist, the realities of situation which the nurse is to provide nursing care. Realities consist of all factors- physical, psychological, emotional and spiritual those are at play in a situation in which nursing actions occur at any given moment. Weidenbach's defines five realities as the agent, the recipient, the goal, the means, and the framework.

3. AGENT

According to the theorist, the agent is the practicing nurse or the delegate is characterized by personal attribute capacities, capabilities and most importantly commitment and competence in nursing.

In this study, the investigator is the agent.

4. RECIPIENT

According to the theorist, the recipient is the patient characterized by the personal attributed problem, capabilities, aspirations and most important is the ability to cope with the concerns or problems being experienced.

In this study, the recipients are adults with type 2 diabetes mellitus who are living in Nanchiyampalayam, Dharapuram.

5. GOAL

According to the theorist, the goal is the desired outcome the nurse wishes to achieve. The goal is the end result to be attained by the nursing action.

In this study, it refers to reduce the level of blood glucose and improve the level of knowledge regarding hypoglycemia among adult with type 2 diabetes mellitus.

6. MEANS

According to the theorist, the means comprise the activities and devices through which the practitioner is enabled to attain her goal. The means includes skilled techniques, procedures and devices that may be used facilitate nursing practice.

In this study, it refers the ladies finger juice was prepared by the nurse for the experimental group and the adults with type 2 diabetes mellitus consume the juice before breakfast for 15 days. The nurse distribute pamphlet regarding hypoglycemia to the adults in both experimental and control group.

7. FRAMEWORK

According to the theorist, the framework consists of the human, environmental, professional and organizational facilities that not only make up the context within which nursing is practiced but also constitutes currently existing limits.

In this study, it refers to the Nanchiyampalayam, Dharapuram

STEP III: VALIDATION THAT NEED FOR HELP WAS MET

According to the theorist, the third component is validation. After help has been ministered, the nurse validates that the actions were indeed helpful. Evidence must come from the patient that the purpose of the nursing action has been fulfilled.

In this study, validating the need for help was met by means of post assessment level of blood glucose which was done after 15 days of intervention. Positive outcomes are presence of normal and controlled diabetes mellitus. Negative outcomes are presence of uncontrolled diabetes mellitus which in turn may need ministering the needed help.

CENTRAL PURPOSE
To reduce the level of blood glucose among adults with type 2 diabetes mellitus

Step – I
Identification of the need for help
Assess the demographic variables like

Age, Sex, Religion, Education, Occupation, Family monthly income, Type of family, Marital Status, Dietary pattern, Compliance of diabetic diet, Practice of exercise, Family history of DM, Duration of treatment for DM, Frequent monitoring blood glucose level, Source of health information.

Pretest

Assess the level of blood glucose by using glucometer among adults with type 2 DM in both experimental and control group for 2 days.

Step – II
Ministration of Help needed

Prescription: Experimental Group:

Preparation of the ladies finger juice for 15 days to the adults in the experimental group.

Control Group:
Carry on with their regular measures to control diabetes mellitus.

Realities:
Agent - Investigator
Recipient – Adults with type 2 diabetes mellitus.
Goals – To reduce the level of blood glucose among adults with type 2 diabetes mellitus.
Means – The ladies finger juice was prepared by the investigator and made to drink the juice before breakfast for 15 days to the adults with type 2 diabetes mellitus in experimental group.
Frame work – Nanchiyampalayam, Dharapuram.

Step – III
Validation that need for help was met

Posttest
- Assess the posttest-I level of blood glucose on 7th day and posttest-II level of blood glucose on 16th day by using glucometer among adults with type 2 DM.
- Assess the level of knowledge on hypoglycemia by using structured interview questionnaire among adults with type 2 DM for both experimental and control group.
- Pamphlet on hypoglycemia was distributed for both experimental and control group.

- Uncontrolled Diabetes mellitus (above 126mg/dl)
- Controlled Diabetes mellitus (101-126 mg/dl)
- Normal (70-100 mg/dl)

- - - - - - - - - - - - Not done in this study

Feedback

Fig: 1 CONCEPTUAL FRAMEWORK BASED ON MODIFIED WIEDENBACH'S HELPING ART OF CLINICAL NURSING THEORY

CHAPTER-II
REVIEW OF LITERATURE

Review of literature is a critical summary on a topic of interest, often prepared to put a research problem a context. A literature review helps in the foundation for a study and can also inspire new ideas. The investigator carried out an extensive review of literature on the research topic in order to collect maximum relevant information to build it. The review of literature has been divided into following headings.

Review of literature as follows:

PART- A: Overview

    i.   Overview of type 2 diabetes mellitus

    ii.   Overview of nutritional values and medicinal benefits of ladies finger

PART-B:

Section A **:**   Studies related to incidence and prevalence of type 2 diabetes mellitus.

Section B **:**   Studies related to effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus.

Section C **:**   Studies related to knowledge of hypoglycemia.

Section D **:**   Studies related to nurses role in intervention with ladies finger juice for type 2 diabetes mellitus.

PART –A
(i).OVER VIEW OF TYPE 2 DIABETES MELLITUS
DIABETES MELLITUS
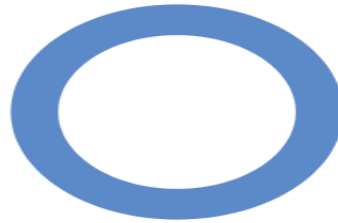
Universal blue circle symbol for diabetes

- Wikipedia

INTRODUCTION:

Diabetes mellitus is a serious health problem throughout the world, and its prevalence is rapidly is fast gaining the title of diabetic capital of the world. The prevalence of diabetes has reached epidemic proportions in most populations. According to the UN World Health Organization (WHO) more than 220 million people worldwide have diabetes, from which more than 70% live in low- and middle income countries. It is expected that the number of diabetic subjects grows to 366 million by 2030, a figure that is more than twice the number in 2000.

DEFINITION:

Diabetes mellitus is a group of metabolic diseases characterized by elevated levels of glucose in the blood (hyperglycemia) resulting from defects in insulin secretion, insulin action, or both.

Expert committee on the diagnosis and classification of diabetes

mellitus.,(2003)

CLASSIFICATION:

- ❖ Type 1 diabetes mellitus
- ❖ Type 2 diabetes mellitus
- ❖ Secondary diabetes mellitus
  - • Genetic defects
  - • Diseases of the pancreas
  - • Endocrinopathies
  - • Drug or chemical induced
  - • Infections
  - • Genetic syndromes associated with diabetes mellitus
- ❖ Gestational diabetes mellitus

Joyce M.Black.,(2012)

TYPE 2 DIABETES MELLITUS

DEFINITION:

Type 2 diabetes mellitus which results from decreased sensitivity to insulin (called insulin resistance) and impaired beta cell functioning resulting in decreased insulin production.

Quinn.,(2001)

Type 2 diabetes is characterised by the body being unable to metabolise glucose (a simple sugar). This leads to high levels of blood glucose which over time may damage the organs of the body.

Type 2 diabetes mellitus was formerly known as Adult onset diabetes mellitus (AODM) or non- insulin dependent diabetes mellitus (NIDDM).

Lewis.,(2015)

INCIDENCE:

Type 2 diabetes mellitus occurs most commonly in people older than 30 years who are obese, although its incidence is increasing in younger adults.

CDC, Diabetes surveillance.,(2002)

RISK FACTORS:

- ✓ Family history of diabetes (ie, parents or siblings with diabetes)
- ✓ Overweight or obese
- ✓ Race /Ethnicity
- ✓ Previously identified impaired fasting glucose or impaired glucose tolerance
- ✓ Hypertension (≥140/90mm/hg)
- ✓ HDL cholesterol level (≤ 35 mg/dl)
- ✓ Diet and physical inactivity
- ✓ Increasing age
- ✓ Insulin resistance

PATHOPHYSIOLOGY:

Type 2 diabetes is characterized by a combination of peripheral insulin resistance and impaired insulin secretion by pancreatic beta cells. Insulin resistance refers to decreased tissue sensitivity to insulin. Normally, insulin binds to special receptors on cell surfaces and initiates a series of reactions involved in glucose metabolism. In type 2diabetes mellitus, these intracellular are diminished, thus rendering insulin less effective at stimulating glucose uptake by the tissues and at regulatory glucose release by the liver.

Despite the impaired insulin secretion that is characteristic of type 2 diabetes mellitus, there is enough insulin present to prevent the breakdown of fat and the accompanying production of ketone bodies.

Brunner.,(2009)

A simplified scheme for the pathophysiology of abnormal glucose metabolism in type 2 diabetes mellitus is depicted in the image below.
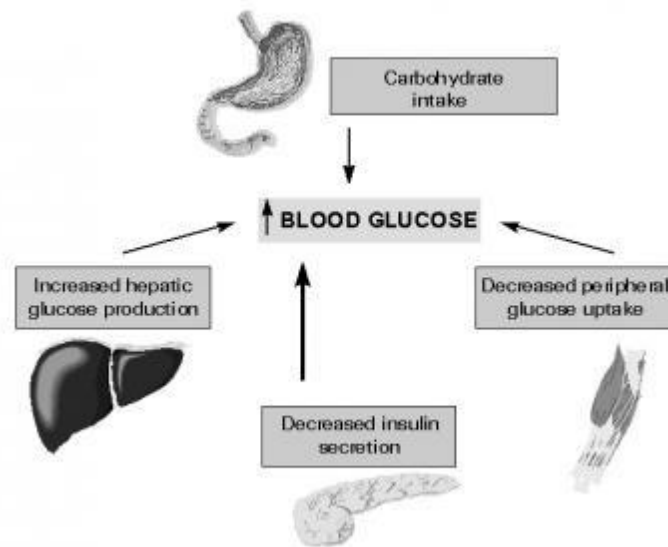
(fig-2) Simplified scheme for the pathophysiology of type 2 diabetes mellitus

Type 2 diabetes mellitus consists of an array of dysfunctions characterized by hyperglycemia and resulting from the combination of resistance to insulin action, inadequate insulin secretion, and excessive or inappropriate glucagon secretion.

SYMPTOMS:

- Polyuria (increased urination)
- Polyphagia (increased appetite)
- Polydipsia (increased thirst)
- Fatigue and
- Weakness,
- Sudden vision changes,
- Tingling or numbness in hands or feet
- Dry skin
- Skin lesions or wounds that are slow to heal
- Recurrent infections

Brunner.,(2009)

DIAGNOSTIC FINDINGS:

Laboratory tests are also used routinely to evaluate diabetes. These include:

Fasting plasma glucose (FPG) test. Blood is taken in the morning after fasting overnight. Normally, blood sugar levels remain between 70 and 100 milligrams per deciliter (mg/dL). Diabetes is diagnosed if a fasting blood sugar level is 126 mg/dL or higher.

Oral glucose tolerance test (OGTT). Blood sugar is measured two hours after drinking 75 grams of glucose. Diabetes is diagnosed if the 2-hour blood sugar level is 200 mg/dL or higher.

Random blood glucose test. A blood sugar of 200 mg/dL or greater at any time of day combined with symptoms of diabetes is sufficient to make the diagnosis.

Hemoglobin A1C (glycohemoglobin). This test measures the average glucose level over the prior two to three months. Diabetes is diagnosed if the hemoglobin A1C level is 6.5% percent or higher.

Blood creatinine and urine microalbumin. Tests for evidence of kidney disease.

Lipid profile. Measures levels of triglycerides and total, HDL, and LDL cholesterol. This evaluates the risk of atherosclerosis. People with diabetes who also have high levels of total cholesterol or LDL cholesterol are at greatly increased risk for heart disease and strokes.

Harvard health publications.,(2008)

MANAGEMENT:

Oral anti diabetic agents:

- **Metformin (Glucophage, Glumetza, others).** Generally, metformin is the first medication prescribed for type 2 diabetes. It works by improving the sensitivity of body tissues to insulin so that body uses insulin more effectively.

- **Sulfonylureas.** These medications help body secrete more insulin. Examples of medications in this class include glyburide (DiaBeta, Glynase), glipizide (Glucotrol) and glimepiride (Amaryl). Possible side effects include low blood sugar and weight gain.

- **Meglitinides.** These medications work like sulfonylureas by stimulating the pancreas to secrete more insulin, but they're faster acting, and the duration of their effect in the body is shorter. Examples include repaglinide (Prandin) and nateglinide (Starlix).

- **Thiazolidinediones.** Like metformin, these medications make the body's tissues more sensitive to insulin. Rosiglitazone (Avandia) and pioglitazone (Actos) are examples of thiazolidinediones.

- **DPP-4 (dipeptidyl peptidase) inhibitors.** These medications help reduce blood sugar levels, but tend to have a modest effect. They don't cause weight gain. Examples of these medications are sitagliptin (Januvia), saxagliptin (Onglyza) and linagliptin (Tradjenta).

- **GLP-1(glucagon like peptide) receptor agonists.** These medications slow digestion and help lower blood sugar levels, though not as much as sulfonylureas. Their use is often associated with some weight loss. This class of medications isn't recommended for use by itself. Exenatide (Byetta) and liraglutide (Victoza) are examples of GLP-1 receptor agonists.

- **SGLT2 (sodium –glucose co-transporter) inhibitors.** These are the newest diabetes drugs on the market. They work by preventing the kidneys from reabsorbing sugar into the blood. Instead, the sugar is

excreted in the urine. Examples include canagliflozin (Invokana) and dapagliflozin (Farxiga).

- **Insulin therapy.** Some people who have type 2 diabetes need insulin therapy as well. In the past, insulin therapy was used as a last resort, but today it's often prescribed sooner because of its benefits.

- Insulin injections involve using a fine needle and syringe or an insulin pen injector — a device that looks similar to an ink pen, except the cartridge is filled with insulin.

- There are many types of insulin, and they each work in a different way. Options include:

o Insulin glulisine (Apidra)

o Insulin lispro (Humalog)

o Insulin aspart (Novolog)

o Insulin glargine (Lantus)

o Insulin detemir (Levemir)

o Insulin isophane (Humulin N, Novolin N)

Mayo clinic.,(2015)

Diet:

Dietary management is an essential component of diabetic care and management. In most cases, type 2 diabetes treatment begins with weight reduction through diet. A healthy diet for a person with diabetes is:

- Whole grains organically grown green leafy vegetables, such as Swiss chard, mustard greens, and kale

- Citrus fruits and red bell pepper

- Red and purple fruits, such as cherries, blueberries

- Nuts, especially almonds and walnuts

- Cold water fish such as salmon, cod, herring, mackerel and halibut

- Extra virgin olive oil

- Cinnamon

- Garlic

- Legumes and whole grains, especially buckwheat, and barley

- Soy foods

- Tomatoes

- Chilli peppers

- A diet that includes carbohydrates from fruits, vegetables, whole grains, legumes, and low-fat milk is encouraged.

- The ideal amount of carbohydrate intake is uncertain. When considered in addition to total carbohydrates, the use of lower glycemic index and glycemic load meals may provide a modest additional benefit for glycemic control.

- Total cholesterol should be less than 300 mg daily. The main sources of cholesterol in the diet are foods such as organ meats and egg yolks. Shrimp and squid are also moderately high in cholesterol but can be included in diet occasionally because they are low in fat.

- The role of dietary protein restriction is uncertain, particularly in view of problems with compliance in patients already being treated with saturated fat and simple carbohydrate restriction. Furthermore, it is uncertain if a low protein diet is significantly additive to other measures aimed at reducing blood glucose.

- A diet that is high in fiber (25 to 30 grams per day) may help to control blood glucose levels and glycated hemoglobin (A1C).

- Artificial sweeteners do not affect blood glucose levels and may be consumed in moderation. The US Food and Drug Administration (FDA) has tested and approved five artificial sweeteners: aspartame (Equal, NutraSweet), saccharin (Sweet'N Low, Sweet Twin), acesulfame-K (Sunnet, Sweet One), neotame, and sucralose (Splenda).

- Sugar alcohols (sorbitol, xylitol, lactitol, mannitol, and maltitol) are often used to sweeten sugar-free candies and gum, and increase blood glucose levels slightly.

- Previously, people with diabetes were told to avoid all foods with added sugar. Some sugar-free foods, such as diet soda, sugar-free gelatin, and sugar-free gum, do not have a significant number of calories or carbohydrates, and are considered "free foods." Any food that has less than 20 calories and 5 grams of carbohydrate is considered a free food, meaning that they do not affect body weight or require additional medication.

- And also need to eat fewer animal products, refined carbohydrates and sweets.

- Avoid concentrated sugars such as dried fruit, fruit juices, saturated fats, trans fats, excessive total fats.

Promote regular physical activity:

Physical activity lowers blood glucose level by increasing carbohydrate metabolism. Everyone needs regular aerobic exercise, and people who have type 2 diabetes are no exception. Then choose activities such as walking, swimming and biking. Aim for at least 30 minutes of aerobic exercise five days of the week. A combination of exercises — aerobic exercises, such as walking or dancing on most days, combined with resistance training, such as weightlifting or yoga twice a week often helps control blood sugar more effectively than either type of exercise alone. Check the blood sugar level before any activity. They might need to eat a snack before exercising to help prevent low blood sugar if take diabetes medications that lower blood sugar.

Monitoring blood sugar:

People with type 2 diabetes can benefit greatly from testing their blood sugar levels as this provides immediate feedback on how food, lifestyle and illness affects blood glucose levels. Regular, structured blood glucose testing (also known as self-monitoring of blood glucose or SMBG) has been shown to improve long-term diabetes control by reducing HbA1c and the risk of complications. To check the blood sugar level, use a device called a glucose meter.

PREVENTION:

- ✓ Maintaining ideal body weight.
- ✓ Exercising regularly—like a brisk walk of 1-2 miles in 30 minutes—at least five times a week, even if that does not result in achieving an ideal weight. That's because regular exercise reduces insulin resistance, even if don't lose weight.
- ✓ Eating a healthy diet.
- ✓ Obtain regular checks of blood cholesterol levels, blood pressure, and blood sugar levels to monitor risk factors and work to achieve and maintain healthy levels of each. Having healthy levels of these three indicators significantly reduces risk of diabetes.
- ✓ Taking medication. The medication metformin (Glucophage) offers some additional protection for people with pre-diabetes.
- ✓ Alternative therapies encompass a variety of disciplines that include everything from diet and exercise to mental conditioning and lifestyle changes. Examples of alternative treatments include acupuncture, guided imagery, chiropractic treatments, yoga, hypnosis, biofeedback, aromatherapy, relaxation exercises, herbal remedies, massage, and many others.

Web Med.,(2016)

COMPLICATIONS:

Some of the potential complications of diabetes include.

- ➢ **Heart and blood vessel disease:** Diabetes dramatically increases the risk of various cardiovascular problems, including coronary artery disease with chest pain (angina), heart attack, stroke, narrowing of arteries (atherosclerosis) and high blood pressure.

- ➤ **Nerve damage (neuropathy):** Excess sugar can injure the walls of the tiny blood vessels (capillaries) that nourish nerves, especially in the legs.
- ➤ **Kidney damage (nephropathy).** Diabetes can damage this delicate filtering system. Severe damage can lead to kidney failure or irreversible end-stage kidney disease, which often eventually requires dialysis or a kidney transplant.
- ➤ **Eye damage.** Diabetes can damage the blood vessels of the retina (diabetic retinopathy), potentially leading to blindness. Diabetes also increases the risk of other serious vision conditions, such as cataracts and glaucoma.
- ➤ **Foot damage.** Nerve damage in the feet or poor blood flow to the feet increases the risk of various foot complications. Left untreated, cuts and blisters can become serious infections, which may heal poorly. Severe damage might require toe, foot or leg amputation.
- ➤ **Hearing impairment.** Hearing problems are more common in people with diabetes.
- ➤ **Skin conditions.** Diabetes may leave more susceptible to skin problems, including bacterial and fungal infections.
- ➤ **Alzheimer's disease.** Type 2 diabetes may increase the risk of Alzheimer's disease.

Mayo clinic.,(2015)

NURSES ROLE

- ➤ To be active participant in the management of the diabetes regimen.
- ➤ To experience few or no subjects of acute hyperglycemic or hypoglycemic emergencies.
- ➤ To maintain blood glucose levels at normal or near-normal levels.

- To prevent, minimize, or delay the occurrence of chronic complications of diabetes.
- To adjust lifestyle to accommodate the diabetes regimen with a minimum of stress.
- The role of the nurse in health promotion and maintenance relates to the identification, monitoring, and education of the patient at risk for the development of diabetes mellitus.
- The diabetes nurse educator is involved in the home and ambulatory care of the patient and the family. This person provides expertise in many areas of specialized care needs.
- Nursing responsibilities' for the patient receiving insulin include proper administration, assessment of patient response to insulin therapy, and education of the patient regarding administration, adjustment to, and side effects of insulin.
- Nursing responsibilities' for the patient taking oral agents include proper administration, assessment of patient's use of response to the oral agents and education of the patient and family about oral agents.
- Nurses play their educating role in the field of prevention of diabetic foot, foot care and preventing from foot injury. In care dimension, nurses responsible for early detection of any changes in skin and foot sensation, foot care and dressing.

Lewis.,(2015)

(ii). OVERVIEW OF NUTRITIONAL VALUES AND MEDICINAL BENEFITS OF LADIES FINGER

INTRODUCTION:

Okra (Abelmoschus esculentus Moench, Hibiscus esculentis Linn), known in many English-speaking countries as lady's fingers or gumbo, is a flowering plant in the mallow family. Okra is an annual herb that is widely cultivated for its edible green seed pods in tropical, subtropical and warm temperate climates. Okra is a hardy plant that can grow even with less water and in hot conditions. Okra traces its origin from what was known as Abyssinia (Ethiopia) spreading right through to Eastern Mediterranean, India, Africa, North America, South America and the Caribbean. Though long popular in the South, it is becoming increasingly common and well known in Western Countries. Okra belongs to the same plant family as hibiscus and cotton. The term "okra" most commonly refers to the edible seedpods of the plant. Okra contains potassium, vitamin B, vitamin C, folic acid, and calcium. It's low in calories and has a high dietary fiber content. Popular forms of okra for medicinal purposes include okra water, okra peels, and powdered seeds.

NUTRITIONAL VALUE OF LADIES FINGER:

Nutrition value per 100g

Principle	Nutrient Value	Percentage of RDA
Energy	1.5%	31 Kcal
Carbohydrates	7.03 g	5.4 %
Protein	2.0 g	4 %
Total Fat	0.1 g	0.5 %
Cholesterol	0 mg	0 %
Dietary Fiber	9 %	3.2 g

Vitamins		
Folates	88 µg	22%
Niacin	1.000 mg	6%
Pantothenic acid	0.245 mg	5 %
Pyridoxine	0.215 mg	16.5 %
Riboflavin	0.060 mg	4.5 %
Thiamin	0.200 mg	17 %
Vitamin C	21.1 mg	36 %
Vitamin A	375 IU	12.5 %
Vitamin E	0.36 mg	2.5 %
Vitamin K	53 µg	44 %

Electrolytes		
Sodium	8 mg	0.5 %
Potassium	303 mg	6 %
Calcium	81 mg	8 %
Copper	0.094 mg	10 %
Iron	0.80 mg	10 %
Magnesium	57 mg	14%
Manganease	0.990 mg	43 %
Phosphorous	63 mg	9 %
Selenium	0.7 µg	1 %
Zink	0.60 mg	5.5%

Dhiviya.,(2013)

BENEFITS OF LADIES FINGER:

❖ Okra is high in fiber. Eight medium-sized pods are estimated to contain 3 grams of fiber. This bulk fiber quality has several benefits. It helps digestion, cuts hunger cravings, and keeps those who eat it fuller for longer. Foods that are high in fiber content are an important part of dietary treatment options for diabetes.

❖ The seed extracts of okra have an antioxidant, anti-stress effect.Managing stress levels is an important part of managing diabetes. Long-term, high stress levels can cause blood sugar levels to spike. Mental health should be a part of any diabetes treatment plan, and using okra and its derivative seeds can be a part of that plan.

❖ The "fatigue levels" can be improved by use of the okra plant. By including okra in diet along with a healthy exercise routine, may be able to work out for longer and recover more quickly from exercise. Cardiovascular activity is an essential part of preventing and treating diabetes. This means that the okra plant may contribute to a more active lifestyle.

❖ Okra's mucilage binds cholesterol and bile acid carrying toxins dumped into it by the filtering liver.

❖ Okra helps lubricate the large intestines due to its bulk laxative qualities. The okra fiber absorbs water and ensures bulk in stools. This helps prevent and improve constipation. Unlike harsh wheat bran, which can irritate or injure the intestinal tract, okra's mucilage soothes, and okra facilitates elimination more comfortably by its slippery characteristic.

❖ Okra fiber is excellent for feeding the good bacteria (probiotics). This contributes to the health of the intestinal tract.

❖ Okra is a supreme vegetable for those feeling weak, exhausted, and suffering from depression.

- ❖ Okra is used for healing ulcers and to keep joints limber. It helps to neutralize acids, being very alkaline, and provides a temporary protective coating for the digestive tract.
- ❖ Okra treats lung inflammation, sore throat, and irritable bowel.
- ❖ In India, okra has been used successfully in experimental blood plasma replacements.

To retain most of okra's nutrients and self-digesting enzymes, it should be cooked as little as possible, e.g. with low heat or lightly steamed. Some eat it raw.

Kathryn Watson.et,al.,(2016)

Other Benefits:
- ✓ Okra is an ideal vegetable for weight loss and is storehouse of health benefits provided it is cooked over low flame to retain its properties. This also to ensure that the invaluable mucilage contained in it is not lost to high heat.
- ✓ For adding bounce hair, boil horizontally sliced okra till the brew become maximally slimy. Cool it and add a few droops of lemon and use this as the last rinse and see hair spring back to youthfulness and jump.
- ✓ Okra is an excellent laxative treats irritable bowels, heals ulcers and sooths the gastrointestinal track.
- ✓ Protein and oil contained in the seeds of okra serves as the source of first-rate vegetable protein. It is enriched with amino acids on the likes of tryptophan, cystine and other sulfur amino acids.

✓   Vitamin C is rich in okra. It is a powerful antioxidant and anti-inflammatory. This anti-inflammatory activity may curtail the development of asthma symptoms. Diets high in insoluble fiber, such as those containing okra, are associated with protection against heart disease in both men and women.

MECHANISM OF ACTION:

Okra is a good choice for people with diabetes, as it has a low glycemic index of about 20. The okra helped reduce the absorption of glucose, which in turn reduced blood sugar levels. The superior fiber found in okra helps to stabilize blood sugar by curbing the rate at which sugar is absorbed from the intestinal tract. The blood sugar stabilizer is okra. The seeds are full of alpha-glucosidase inhibitors. They prevent starches from converting to glucose to sugar in blood stream.

The Institute For Natural Healing (INH).,(2015)

PREPARATION OF LADIES FINGER JUICE:

Take two numbers of Ladies Finger and remove/cut both ends of each piece. Also put a small cut in the middle and put these two pieces in 250 ml of glass of water. Cover the glass and keep it at room temperature during night. Early morning, before breakfast simply- remove two pieces of ladies finger from the glass and drink that water.

A Sapna.,(2014)

PART-B

SECTION A: **STUDIES RELATED TO INCIDENCE AND PREVALENCE OF TYPE 2 DIABETES MELLITUS**

Anuradha Mascarenhas.,(2016) conducted a study, China, India and USA were among the top three countries with a high number of diabetic population. While the numbers climbed from 20.4 million in China in 1980 to 102.9 million in 2014, the rise has been equally dramatic in India from 11.9 million in 1980 to 64.5 million in 2014 in India. Prevalence of diabetes had more than doubled for men in India and China (3.7 per cent to 9.1 per cent in India and 3.5 per cent to 9.9 per cent in China). It had also increased by 50 per cent among women in China (5.0 per cent to 7.6 per cent) and 80 per cent among women in India (4.6 per cent to 8.3 per cent).

Manuj Sharma et al .,(2016) conducted a retrospective cohort study to assess the trends in incidence, prevalence and prescribing in type 2 diabetes mellitus in primary care. The research design was analysis of longitudinal electronic health records in the health improvement network (THIN) primary care database. The Setting was UK primary care. The Participants in total was 8 838 031 individuals aged 0–99 years. The overall results were the incidence of T2 diabetes mellitus increased from 3.69 per 1000 person-years at risk (PYAR) (95% CI 3.58 to 3.81) in 2000 to 3.99 per 1000 PYAR (95% CI 3.90 to 4.08) in 2013 among men; and from 3.06 per 1000 PYAR (95% CI 2.95 to 3.17) to 3.73 per 1000 PYAR (95% CI 3.65 to 3.82) among women. Prevalence of T2 diabetes mellitus more than doubled from 2.39% (95% CI 2.37 to 2.41) in 2000 to 5.32% (95% CI 5.30 to 5.34) in 2013. Being male, older, and from a more socially deprived area was strongly associated with having T2 diabetes mellitus, (p<0.001). In 2013, metformin prescribing peaked at 83.6% (95% CI 83.4% to 83.8%), while sulfonylureas prescribing reached a low of 41.4% (95% CI 41.1% to 41.7%).

Chythra R. Rao, et al., (2015) conducted a cross-sectional community-based survey to assess the prevalence of type 2 diabetes in coastal Karnataka. The study was carried out on 1,239 respondents, using a two-stage, stratified, random sampling technique. Data were collected by a personal, face-to-face interview followed by blood sugar estimation using a glucometer. The results were overall prevalence of diabetes was 16%. Self-reported diabetes were 11.2%, while 4.8% of previously normal people were found to had high fasting capillary blood glucose levels. Increasing age showed two-fold, four-fold, and six-fold higher odds for 40 – 49, 50 – 59, and ≥ 60 years age group, respectively, as compared to the 30 - 39 year age group ($P < 0.001$). Nineteen percent of the males had diabetes, (OR = 1.38, 95% CI = 1.01 – 1.88). In the high socioeconomic strata, 32% of the subjects had diabetes ($P = 0.018$ unadjusted odds ratio 3.29, 95% CI = 1.40 – 7.74).

Shankar Radhakrishnan ,et al.,(2015) conducted a study to assess the Prevalence of diabetes and hypertension among a tribal population in Tamil Nadu. A total of about 525 tribal population above 40 years of age from various tribal places in Yercaud (Yercaud is a hill station located from about 25 km from Salem).The results are, of the total 525 study population, 306 were females and 219 were males. It shows the distribution of the study population based on their RBS levels about 18 (8.2%) males and 21 (6.8%) females were in the stage of prediabetic and 11 (5%) males and 17 (5.5%) females were diagnosed as diabetes. Majority of prediabetics (RBS between 140 and 200) and diabetics (RBS >200) were in the age group between 40 and 60 years. The researcher concluded that the prevalence of diabetes and hypertension was increasingly high in the tribal areas and their awareness levels were very poor.

Udhy Shankar, et al.,(2014) conducted a cross-sectional study to assess the prevalence of undiagnosed Type 2 Diabetes and its associated risk factors in the rural area, Sripuram of Tamil nadu . Data collection was done by household survey by direct interview using a pretested and structured

questionnaire. Blood glucose was measured by one touch glucometer as per WHO recommendation. The results revealed that, prevalence of undiagnosed diabetes was 11.1% that was 56 persons out of 505 subjects which was higher than the prevalence of diabetes mellitus among rural area.

Shamima Akter,et al.,(2014) conducted a nationwide survey on prevalence of diabetes and prediabetes and their risk factors among Bangladeshi adults. Probability samples of men and women were selected for interview using a two-stage, stratified cluster sample of households that included strata for rural and urban areas. The results were, the age-adjusted prevalence of diabetes and pre diabetes was 9.7% and 22.4%, respectively, and there was no significant difference between the sexes. However, the age-adjusted prevalence of diabetes among urban residents was almost double that in rural resident, 15.2% versus 8.3%, respectively. In contrast, the age-adjusted (age 35 years or older) prevalence of pre diabetes was slightly lower among urban than rural residents, 19.0% versus 23.5%, respectively. Among diabetics, 56.0% were unaware they had the condition and only 39.5% were receiving treatment regularly.

Anu Gaikwad .et al.,(2014) conducted a cross-sectional survey on prevalence of Diabetes Mellitus, Hypertension and Hyperlipidaemia in candidates contesting for Pimpri Chinchwad (PCMC) municipal elections, Pune, Maharashtra, India.Among 117 (women: 37; men: 80) candidates who were selected randomly. The result reveals that, the prevalence of Diabetes mellitus was 27.35 percent (men: 32.5 percent and women: 16.22 percent). That of IFG was 9.4 percent [8.75 percent (7/80) among men and 10.81 percent (4/37) among women]. The researcher concluded that, prevalence of Diabetes in the study population was high.

Bhatti GK, et al.,(2014) conducted a study on evaluation of risk factors associated with Type 2 Diabetes and related complications in Asian Indians. 3318 subjects belonging to the North Indian states from Chandigarh and adjoining areas. The result revealed that, the study population consisted of 3318 subjects, among whom 1667 were Non diabetic controls (911 male; 756 female) and 1651 T2 Diabetes subjects (947 male and 704 female). All the participants originated from north Indian states viz. Punjab (34.4%), Chandigarh (47.5%), Haryana (10.9%), Himachal Pradesh (3.7%) and other parts of North India (3.5%). Of the total 1651 T2 Diabetes patients including 219 newly diagnosed subjects, 65.9% were taking oral hypoglycemic agents, 4.3% were on insulin therapy, 1.3% were on insulin treatment along with oral agents and 28.5% were maintaining glycemic control with diet/exercise but not taking regular treatment.

Sumanth M Majgi.et.al.,(2013) conducted a study on diabetes in rural Pondicherry, India: a population-based study of the incidence and risk factors. The samples are 1223 adults from two villages of Pondicherry were selected using cluster random sampling. Data were collected using a structured questionnaire, anthropometric tests and fasting blood glucose assessment was done. Of these, 71 (5.8%) were found to have diabetes and 85% of the non-diabetics (979/1152). The result of the study reveals that during 2937 person-years (PY) of follow-up, 63 new cases of T2DM occurred, giving an incidence rate of 21.5/1000 PY. Almost one third (31.7%) of cases occurred in people aged below 40 years. The incidence was double among males (28.7/1000 PY; 95% confidence interval (CI): 21.0–38.7) compared with females (14.6/1000 PY; 95% CI: 9.4–21.7). The researcher concluded that T2DM incidence was 2% per year in adults in rural Pondicherry.

Kiran Nagaraju. et al., (2013) conducted a study to assess the effectiveness of structured teaching programme on prevention of Microvascular and macrovascular complications among patients with Diabetes Mellitus in Selected Hospitals at Bangalore . The sample size consists of 50 DM patients, 25 in control group and 25 in experimental group. A structured knowledge questionnaire (SKQ) was administered to assess knowledge among experimental and control group. The result revealed that, over all pretest and posttest mean knowledge scores of the respondents in experimental group, the post-test mean knowledge score of respondents was higher 30.84 (77.1%) . The paired't' test value was 27.31, which is statistically significant at 0.05 level. The aspect wise Mean Pretest and Posttest knowledge Score of experimental group. In the aspect of Microvascular Complications of DM, the mean was 22.4% and 82.4% with an enhancement of 60.0%. In the aspect of macrovascular complications of DM, the mean was 20.8% and 77.2% with an enhancement of 56.4%.

SECTION B :   STUDIES RELATED TO EFFECTIVENESS OF LADIES FINGER JUICE ON BLOOD GLUCOSE LEVEL AMONG ADULTS WITH TYPE 2 DIABETES MELLITUS

Nithya Neelakantan .et ,al.,(2014) conducted a study on effect of ladies finger juice (Abelmoscus esculentus (L.) Moench) intake on glycemia: a meta-analysis of clinical trials in Singapore. Data on change in fasting blood glucose, 2 hour postload glucose, and HbA1c were pooled using random-effects models. The result revealed that, ladies finger juice significantly changed fasting blood glucose by -0.96 mmol/l (95% CI: -1.52, -0.40; $I^2 = 80\%$;), 2 hour postload glucose by -2.19 mmol/l (95% CI: -3.19, -1.19; $I^2 = 71\%$;) and HbA1c by -0.85% (95% CI: -1.49%, -0.22%; $I^2 = 0\%$;) as compared with control interventions. The researcher concluded that, results from clinical trials support

beneficial effects of ladies finger juice on glycemic control in persons with diabetes.

Sarika Davis .et, al.,(2014) conducted a study on effectiveness of lady's finger juice in the control of blood sugar among Type 2 Diabetes Mellitus aged 45-60 years in selected areas of Mangalore. A quasi experimental research approach with purposive sampling technique was used. Data collection was done by baseline proforma, compliance diary and fasting blood sugar monitoring chart. The results revealed the mean FBS value of the experimental group in the pretest (219.3±69.3), post test 1 on 7th day (199±67.9),and post test 2 on the 11th day (189.45±67.2) .This showed that, the decline in the mean FBS value in the experimental group due to the administration of lady's finger juice .

V. Sabitha.et,al.,(2012) conducted a study on in vitro α -glucosidase and α -amylase enzyme inhibitory effects in aqueous extracts of Abelmoscus esculentus (L.) Moench, Coimbatore. To provide in vitro evidence for antidiabetic activity through potential inhibition of α -glucosidase and α -amylase enzymes using the aqueous extracts of Abelmoschus esculentus (L.) Moench. (A. esculentus) peel (AAPP) and seed (AASP).The results were the AAPP and AASP showed appreciable α -glucosidase [IC50 = (142.69 ±0.32) μg/mL and (150.47 ± 0.28) μg/mL] and α amylase [(IC50 = (132.63 ± 0.16) μg/mL and (147.23 ± 0.21) μg/mL] inhibitory effect in a concentration-dependent manner. The researcher concluded that the present study results, given a clear evidence that Abelmoscus esculentus had antidiabetic activity.

Abdulrahim Aljamal ., (2011) conducted a study on effects of ladies finger water on the patients with Diabetes Mellitus in Mumbai. Sixty five people with type 2 diabetes were divided in two groups. The patients consumed ladies finger water shows reduced plasma glucose with significant 30% after 30 days. There were no significant changes in the placebo group.

Total cholesterol decreased, 22%, after 30 days with larger decreases in low density lipoprotein 24%. The researcher concluded that, this study demonstrates that consumption of ladies finger water decreases risk factors for diabetes and suggests that ladies finger water may be beneficial for people with type 2 diabetes.

Hajeera K.et,al.,(2010) conducted a study on in vitro study of the effects of viscous soluble dietary fibres of Abelmoschus esculentus L (Lady's finger) in lowering intestinal glucose absorption, Bangladesh. The results are diffuse from systems H to L was 0.30-0.35 mg/ml at 20 min and 75-85.07% of control, respectively. In highest concentration of Na-Carboxy methylcellulose (Na-CMC) (10mg/ml) were considered significant reduction at 100 and 120 minutes. From the system L maximum reduction of diffusion was observed at 60 minutes(70% of control).Diffusion systems were observed compared to control in a concentration-dependent manner ($P<0.05$) which implicates a possible potential role of viscous soluble dietary fibres (VSDF) of fruits of Abelmoschus esculentus L in lowering postprandial serum glucose.

Gupta A.,(2007) conducted a study on effect of okra water on glycaemic control and insulin resistance in type 2 diabetes mellitus in Jaipur. Twenty five newly diagnosed patients with type 2 diabetes (fasting glucose < 200 mg/dl) were randomly divided into two groups. The fasting blood glucose (148.3 +/- 44.1 to 119.9 +/- 25 vs. 137.5 +/- 41.1 to 113.0 +/- 36.0) and two hour post prandial blood glucose (210.6 +/- 79.0 to 181.1 +/- 69 vs. 219.9 +/- 41.0 to 241.6 +/- 43) were not different. But area under curve (AUC) of blood glucose (2375 +/- 574 vs 27597 +/- 274) as well as insulin (2492 +/- 2536 vs. 5631 +/- 2428) was significantly lower (p < 0.001). The researcher concluded that, adjunct use of okra water improves glycemic control and decreases insulin resistance in mild type-2 diabetic patients.

SECTION C: STUDIES RELATED TO KNOWLEDGE OF

HYPOGLYCEMIA

Garima Bhutani,.et,al.,(2015) conducted a study on effect of diabetic education on the knowledge, attitude and practices of diabetic patients towards prevention of hypoglycaemia in Haryana. This was a longitudinal study involving the use of a structured questionnaire for obtaining baseline information related to knowledge, attitude and practices (KAP) of diabetic patients regarding hypoglycemia. The results were out of these 109 patients, 63 (57.79%) were males and rest 46 (42.20%) were females. The hypoglycemic symptoms mean score after the diabetic education was 1.01± 0.08 at p<0.004.The researcher concluded that   proper diabetic education was seen to improve the knowledge and attitude of the diabetic patients toward hypoglycemia.

Siham Ahmed Balla.et,al.,(2013) conducted a cross sectional study was carried out in a rural area of Sudan to assess the prevalence of diabetes, knowledge and attitude of rural population towards diabetes and hypoglycaemic event. The study population was 3316 adult males /females above 30 years of age. Structured questionnaire was used including eighteen questions to assess the knowledge about diabetes. The results were the study included 1423 (42.9%) males and 1893(57.1%) females. Dizziness as a sign of hypoglycemia was mentioned (38.1%) followed by rigors (24.4%), sweating (21.4%) and palpitation (17.1%). Retinopathy (31.1%) and cardiovascular diseases (16.0%) were known by the study population as complications of diabetes. The response of diabetic population towards hypoglycemia event was significantly higher compared to non-diabetic, p-value 0.001.

Vanishree Shriraam.et,al.,(2013) conducted a study on knowledge of hypoglycemia and its associated factors among type 2 diabetes mellitus patients in a Tertiary Care Hospital in South India. The setting of the study was outpatient department (OPD) of a medical college hospital. Every fifth patient attending the OPD during the 4 months between March and June 2013 was interviewed using a questionnaire. The results were the study included 366 type 2 diabetic patients, of which 76.5% were females. The target fasting and postprandial blood glucose levels while on treatment was known to 135 (36.9%) and 126 (34.4%) patients, respectively. The common symptoms of hypoglycemia known to the study subjects were dizziness (81.4%), weakness (73.8%), and drowsiness (72.1%). Overall, 242 (66.1%) diabetic patients had good knowledge on hypoglycemia. The researcher concluded that although the knowledge on the symptoms, remedial measures, and prevention of hypoglycemic episodes was good among the type 2 diabetic patients in the study.

Girma Nega Gezie1.et,al.,(2012) conducted a institution based cross-sectional study to assess the knowledge and practice on prevention of hypoglycemia among diabetic patients in South Gondar, Northwest Ethiopia. A pre-tested, structured and interview administered questionnaire was used to collect data .From the total study participants 416 out of 105(25.5%) were found to have good knowledge about hypoglycemia prevention. Eighty nine (21.4%) had good practice in hypoglycemia prevention. Respondents who attained primary education (AOR=2.14, 95%CI: 1.19, 3.84), secondary education (AOR 3.02, 95%CI: 1.53, 5.98), college and above (AOR=2.35, 95%CI: 1.08, 5.13) were found to be more likely to have good knowledge compared with respondents who did not have formal education. Those who were members of Ethiopian diabetic association were about four times more likely to be knowledgeable (AOR=3.91, 95%CI: 2.26, 6.77) and six times more likely to practice hypoglycemia prevention (AOR=6.08, 95%CI: 3.34, 11.05).

The researcher concluded that knowledge and practice of hypoglycemia prevention among diabetic patients were low as revealed by this study.

Nehad M. Hamoudi.et,al.,(2012) conducted a study on knowledge and awareness among diabetic and non diabetic Nigerian population in Kaduna state towards diabetes mellitus (DM) different knowledge domain and, to evaluate diabetic patients' awareness towards anti-diabetic therapy, hypoglycemia management and their practical approach towards diabetes mellitus control. This was a cross-sectional study based on validated, self administered questionnaire. Three hundred forty (340) subjects included 33.7% diabetic subjects and 66.2% non diabetic participants attending NNPC-industrial clinic and Barau Dikko specialist hospital Kaduna, Nigeria. The result reveals that, 34.2% of diabetic participants were not aware about hypoglycemic symptoms and 53.8% not aware about management of these symptoms.

Nada A Abahussain·et,al.,(2006) conducted a study to assess diabetes knowledge among self reported diabetic female teachers: Al-Khobar, Saudi Arabia. A total of 91 female diabetic school teachers were interviewed in the School Health Clinic in Al-Khobar using a structured questionnaire. The results showed that understanding of diabetes was (45%) inadequate Knowledge about symptoms of hypoglycemia was low. One-fourth (25%) of the sample of this study was using certain herbs for the treatment or management of diabetes mellitus. About three- fourths were overweight and obese. The researcher concluded that awareness and education about diabetes were needed urgently among the studied sample.

F.J.Thomson.et,al.,(2006) conducted a study on lack of Knowledge of Symptoms of Hypoglycaemia by Elderly Diabetic Patients,Iran. The knowledge of symptoms of hypoglycaemia of 45 consecutive elderly diabetic patients was assessed during a structured interview and compared with that of an age-matched non-diabetic control group. Twenty-three (88%) patients taking oral hypoglycaemic agents (OHAs) and six (32%) insulin-treated patients denied any knowledge of hypoglycaemia. There was no significant difference in knowledge of 14 symptoms of hypoglycaemia between the non-diabetic controls and the combined diabetic (OHA and insulin) groups, but insulin-treated patients were slightly more knowledgeable than patients taking OHAs. Fourteen (54%) of the OHA group were taking either glibenclamide or chlorpropamide which have been associated with severe and prolonged hypoglycaemia.

Ahmed G. Elzubier.,(2001) conducted a cross-sectional study on to assess the knowledge of hypoglycemia by primary health care centers registered diabetic patients.1039 diabetic subjects, registered in the urban and rural primary health care centers of Makkah. The tool of data collection was a structured questionnaire. The result revealed that, 361(35%) of subjects had good knowledge score of hypoglycemia, 678(65%) of subjects had a poor knowledge score of hypoglycemia. Main variables significantly associated with poor knowledge score were male gender (P< 0.001), low education (P <0.0001), non-compliance with treatment (P < 0.02), and lack of knowledge about hypoglycemia (P < 0.00001).There is a need for health education of diabetic subjects about symptoms of hypoglycaemia, in order to deal with it in an effective way.

SECTION D : STUDIES RELATED TO NURSES ROLE IN INTERVENTION WITH LADIES FINGER JUICE FOR TYPE 2 DIABETES MELLITUS.

Nithiya.et,al.,(2015) conducted a study on Blood glucose before and after lady's finger water among type 2 diabetic patients in Komarapalayam. The research design selected for the study was an quasi experimental ,pre test post test control group design. Effectiveness of lady's finger water on blood glucose was evaluated between 20 type 2 diabetic patients in experimental group and 20 in control group selected by purposive sampling method. The tool was used for the study was an interview schedule to collect the baseline information and GLUCOBLAB glucometer to assess the blood sugar. The results are, there was a significant reduction in blood sugar in experimental group after ladies finger water, t=7.46(p<.05).

Kamakhya Kumar et al.,(2015) conducted a prospective study to assess the effect of ladies finger water on glycemia and dyslipidemia in patients with type 2 diabetes mellitus in Bihar. The results are after 8 weeks of taking ladies finger water in patients, there was a significant improvement in blood glucose fasting level (178±72.4 to 104±28.2; p < 0.0001), T-cholesterol (350±20.6 to 176±17.2; p < 0.0001), triglycerides (280±18.2 to 132±16.8; p < 0.0001), low-density cholesterol (220±21.4 to 96±14.2; p < 0.0001), and high-density cholesterol (27.0±13.4 to 58±32.2; p < 0.0002). The researcher concluded that this study supports beneficial effects of ladies finger water on glycemia and dyslipidemia in patients with type 2 DM and can be used as an adjuvant/alternative in management of diabetes and its complications.

CHAPTER – III
RESEARCH METHODOLOGY

This chapter deals with the methodology adopted for the study. It includes research approach, research design, setting, population, sample and criteria for sample selection, sample size, sampling technique, instrument, and scoring procedure, method of data collection and validity, reliability and plan for data analysis.

RESEARCH APPROACH

The evaluative approach was used to the study.

RESEARCH DESIGN

The research design selected for the study was quasi experimental non equivalent control group pretest, posttest design.

GROUP	PRE TEST	INTERVENTION	POST TEST
Experimental group	O_1	X	O_2
Control group	O_1	-	O_2

The symbols used:

O_1 -   Assess the pre test level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

X   -   Ladies finger juice was given to the experimental group for 15 days.

O_2 -   Assess the post   test level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

SETTING OF THE STUDY

       The pilot study was conducted in Nehru nagar, Dharapuram and the main study was conducted in Nanchiyampalayam, Dharapuram. It is an urban area which is 3 kilometers away from Dharapuram. The total population of the Nanchiyampalayam is 6770. It consists of 5 streets such as Tirupur Street, RC Street, Kaman Kovil Street, Nadar Street and Jinnahmaithanam Street. The people get medical aid from the government hospital and urban PHC at Dharapuram. One primary school and one higher secondary school are there for educational purpose. Water and electricity facilities are available. The common occupation in the village is agriculture. Most of the people are coolie workers going for construction works, tailoring and shop workers.

POPULATION

       The target population selected for the study was adults with type 2 diabetes mellitus.

SAMPLE

       The samples who were diagnosed as a type 2 diabetes mellitus residing in Nanchiyampalayam.

CRITERIA FOR SELECTION OF THE SAMPLE
INCLUSION CRITERIA

- Adults in the age group of 40-60 years.
- Adults who are having fasting blood glucose level >126 mg/dl.
- Adults who are available at the time of data collection.
- Both males and female adults.
- Adults who are willing to participate in this study.
- The adults who are on antidiabetic agents.

EXCLUSION CRITERIA

- Adults who are diagnosed as diabetes mellitus with cardiac diseases.

- Adults who are diagnosed as diabetes mellitus with hypertension.

SAMPLE AND SAMPLING

SAMPLE SIZE

Sample size for the study was 60 out of which, 30 were in experimental group and 30 were in control group.

SAMPLING TECHNIQUE

Non probability purposive sampling technique was used to select the samples for the study.

INSTRUMENT AND SCORING PROCEDURE

The instrument consists of 3 sections.

SECTION –I

It consists of demographic variables consist of age, sex, religion, education, occupation, family monthly income, type of family, marital status, dietary pattern, compliance of diabetic diet, practice of exercise, family history of diabetes mellitus, duration of treatment for diabetes mellitus, frequent monitoring of blood glucose level and source of health information.

SECTION – II

Fasting Blood glucose level adopted from **American Diabetes Association, 2013.**

Blood Glucose Level	Range
Un controlled diabetes mellitus	Above 126mg/dl
Controlled diabetes mellitus	101-126 mg/dl
Normal	70-100 mg/dl

SECTION-III

It consists of Structured interview questionnaire includes 30 multiple choice questions on knowledge of hypoglycemia which includes definition, causes, signs and symptoms, management, prevention and complications of hypoglycemia. Each question has four options out of which one was the correct answer. Total score was 30.

SCORE INTERPRETATION
SECTION-III

The structured interview questionnaire was used to assess the knowledge regarding hypoglycemia among adults with type 2 diabetes mellitus. It consists of 30 multiple choice questions, each correct answer was scored as (1)one and a wrong answer was scored as (0)zero. The total score was 30.

The score were interpreted as below,

Level of knowledge	Frequency	Percentage
Adequate	21-30	67-100%
Moderately adequate	11-20	34%-66%
Inadequate	0-10	0%-33%

VALIDITY

The validity of the tool was obtained by four nursing experts in the field of community health nursing and one medical expert. The tool was modified according to the suggestions and recommendations of the experts. The accuracy of the glucometer (ACCU-CHEK Active) instrument was checked with lab analyzer. The accuracy (r=0.99) was assessed by using Karl Pearson's formula.

RELIABILITY

The reliability of the glucometer instrument was assessed by equivalence using interrater reliability method by using Karl Pearson's formula. The value was found to be reliable(r=0.99).Oral Permission was obtained from each subject before taking the blood sample.

The reliability of the structured interview questionnaire was established by testing the internal consistency and stability. Stability was assessed by test retest method using karl pearson's co-efficient formula. The value was found to be reliable(r=0.94). Internal consistency was assessed by split half method using Spearman brown formula. The value was found to be reliable(r=0.91).

PILOT STUDY

The pilot study was conducted in Nehru nagar, Dharapuram. The purpose of the study was explained to the samples. Non probability purposive sampling technique was used to select the samples. The sample size was 6 adults, 3 in experimental group and 3in control group and samples were selected as per the inclusion criteria. On the first 2 days the pretest fasting blood glucose level was checked by using glucometer for both groups. On the 2nd day evening the investigator prepared the 250ml ladies finger juice for each sample of experimental group. On the 3rd day morning the experimental group samples were asked to consume the ladies finger juice before breakfast

for 7 days. Every day morning, the experimental group drank the ladies finger juice in empty stomach under the supervision of the investigator. During the day time the investigator collected demographic data and level of knowledge on hypoglycemia by using structured knowledge interview questionnaire. It took taken 40 minutes per day for each sample. The posttest fasting blood glucose level was checked on 4th and 8th day for both experimental group and control group. The collected data were analyzed by using descriptive and inferential statistics.

The findings of the pilot study showed that the mean pretest level of blood glucose was (174 ± 42.33) in the experimental group and in the control group the mean pretest level of blood glucose was (153 ± 6.36). The mean posttest –I level of blood glucose was (143 ± 36.66) and posttest –II level of blood glucose was (117 ± 25.23) in the experimental group. In control group posttest –I level of blood glucose was (147 ± 24.70) and posttest –II level of blood glucose was (145 ± 6.44).The paired't' value for blood glucose posttest–I was 7.785 and posttest-II was 5.397 in the experimental group. The paired't' value for blood glucose posttest-I was 0.588 and posttest-II was 2.819 in the control group. The independent 't' value post test-I was 0.165 and posttest-II was 2.536. The mean score of knowledge was (19 ± 2.34) in the experimental group and the mean score of knowledge was (19 ± 4) in the control group. The pilot study revealed that the study was feasible and practicable to conduct the main study.

DATA COLLECTION PROCEDURE

The main study was done in Nanchiyampalayam at Dharapuram and the streets included were Tirupur Street, Kaman Kovil Street and Jinnahmaithanam Street. Data collection was done for a period of 5 weeks. Permission was obtained from the ethical committee, Block medical officer of Ponnapuram and Counsellor of Nanchiyampalayam. The oral permission was obtained from each participant prior to the study. The Purposive sampling technique was used to select 60 samples, out of which 30 were in experimental group from Tirupur street, Kaman Kovil street and 30 were in control group from Jinnahmaithanam street. The first 2 days morning, pretest fasting blood glucose level was checked by using glucometer (average value of blood glucose was taken for calculation) and during the daytime demographic variables were collected from the experimental group. On the 2nd day evening the investigator had prepared the 250ml of ladies finger juice for each sample in experimental group. Instructions were given to the samples in experimental group regarding measures to be taken in hypoglycemia. From the third day morning onwards, the experimental group were asked to consume the ladies finger juice before breakfast for 15 days. Every day morning, the experimental group drank the ladies finger juice in empty stomach under the supervision of the investigator. During day time knowledge on hypoglycemia was assessed by using structured interview questionnaire for the experimental group. It took 40-45 minutes for each sample.

The posttest fasting blood glucose level was checked on 7th and 16th day after intervention for the experimental group. After the posttest, pamphlet on hypoglycemia was given to the experimental group. From next day onwards, for the control group, pretest fasting blood samples were taken and demographic variables were collected for 2 days. The first posttest fasting blood samples were taken on the 7th day. The 2nd posttest fasting blood samples were taken on the 16th day. During daytime the knowledge on hypoglycemia

was assessed in control group. On the 16th day after taking the blood samples, the pamphlet on hypoglycemia was given to the control group also.

Finally for all the 60 samples ladies finger seeds were given to grow it in their kitchen garden for their further use. The collected data were analyzed and tabulated by using descriptive and inferential statistics.

PLAN FOR DATA ANALYSIS

S. No	Data Analysis	Method	Objectives
1.	Descriptive statistics	Frequency, percentage	To assess the demographic variables among adults with type 2 diabetes mellitus. To assess the level of knowledge on hypoglycemia among adults with type 2 diabetes mellitus.
		Mean standard deviation	To assess the pretest and posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group. To assess the level of knowledge on hypoglycemia among adults with type 2 diabetes mellitus in experimental and control group.
2.	Inferential statistics	Paired 't' test	To compare the pretest and posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental group.

S. No	Data Analysis	Method	Objectives
		Independent 't' test	To find the effectiveness of ladies finger juice in reducing blood glucose level among adults with type 2 diabetes mellitus between experimental and control group.
		Beta co-efficient	To find the association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.

PROTECTION OF HUMAN SUBJECTS

The research proposal was approved by the ethical committee prior to conduct of pilot study and major study. The written permission was obtained from the ethical committee, Block medical officer of Ponnapuram and Counsellor of Nanchiyampalayam and oral consent from each subject was obtained before starting the data collection by explaining the purpose of the study. Assurance was given to the subjects that confidentiality of their personal data would be maintained.

CHAPTER – IV
DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collection to assess the effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram.

ORGANIZATION OF THE DATA:

The collected data were analyzed, tabulated and organized as follows:

SECTION- A: Description of demographic variables.

SECTION-B : To assess the pretest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

SECTION- C: To assess the posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

SECTION-D: To compare the pretest and posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

SECTION- E: To compare the posttest level of blood glucose among adults with type 2 diabetes mellitus between experimental and control group.

SECTION-F: To assess the knowledge on hypoglycemia among adults with type 2 diabetes mellitus in experimental and control group.

SECTION-G: To find out the association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.

SECTION A: DESCRIPTION OF DEMOGRAPHIC VARIABLES

Table 1: Frequency and percentage distribution of demographic variables among adults with type 2 diabetes mellitus in experimental and control group.

$n_1=30$; $n_2=30$

S.No	Demographic variables	Experimental Group n_1		Control Group n_2	
		F	**%**	**F**	**%**
1.	Age				
	a. 40-45 years	6	20	3	10
	b. 46-50 years	4	13	7	23
	c. 51-55 year	5	17	7	23
	d. 56-60 years	15	50	13	43
2.	Sex				
	a. Male	13	43	13	43
	b. Female	17	57	17	57
3.	Religion				
	a. Hindu	27	90	-	-
	b. Christian	1	3	-	-
	c. Muslim	2	7	30	100
4.	Education				
	a. No formal education	10	33	8	27
	b. Primary School	4	13.3	16	53
	c. High school	8	27	3	10
	d. Higher secondary school	4	13.3	3	10
	e. Graduate	4	13.3	-	-

S.nNo	Demographic variables	Experimental Group n_1		Control Group n_2	
		F	%	F	%
5.	Occupation				
	a. Coolie	14	46	12	40
	b. Government Employee	5	17	1	3.3
	c. Private Employee	5	17	1	3.3
	d. Un employed	6	20	16	53.3
6	Family monthly income				
	a. Rs.5000 – 6000	18	60	22	73
	b. Rs.6001 – 7000	2	7	3	10
	c. Rs.7001 – 8000	3	10	2	7
	d. Above Rs.8001	7	23	3	10
7	Type of Family				
	a. Joint Family	13	43	13	43
	b. Nuclear Family	17	57	17	57
8	Marital Status				
	a. Married	29	97	28	93
	b. Unmarried	1	3	2	7
	c. Divorce	-	-	-	-
9	Dietary pattern				
	a. Veg	5	17	6	20
	b. Non – Veg	25	83	24	80
10	Compliance of diabetic diet				
	a. Yes	25	83	15	50
	b. No	5	17	15	50
11	Practice of exercise				
	a. Yes	9	30	8	27
	b. No	21	70	22	73

S.No	Demographic variables	Experimental Group n_1		Control Group n_2	
		F	%	F	%
12	Family history of diabetes Mellitus				
	a. yes	5	17	12	40
	b. No	25	83	18	60
13	Duration of treatment for DM				
	a. Below 1 year	5	17	2	7
	b. 1 year – 2 years	11	36	6	20
	c. 3 years – 4 years	8	27	9	30
	d. Above 5 years	6	20	13	43
14	Frequent monitoring of blood glucose level				
	a. Once in 15 days	4	13	-	-
	b. Once in 1 month	17	57	19	64
	c. Once in 3 months	8	27	9	30
	d. Above 3 months	1	3	2	6
15	Source of health information				
	a. Television	8	27	12	40
	b. Radio	3	10	-	-
	c. News Paper	2	7	2	7
	d. Health workers	17	57	16	53

The Table 1: depicts that the frequency and percentage distribution of demographic variables among adults.

Regarding age , 6(20%) of the adults were in the age group of 40-45 years,4(13%) were in the age group of 46-50 years,5(17%) were in the age group of 51-55 years and 15(50%) were in the age group of 56-60 years in experimental group. In the control group 3(10%) of the adults were in the age group of 40-45 years,7(23%) were in the age group of 46-50 years, 7(23%) were in the age group of 51-55 years and 13(43%) were in the age group of 56-60 years in experimental group and in control group . **(fig:3)**

Regarding sex, majority 17(57%) of the adults were female and 13(43%) were male both in the experimental group and control group .

Regarding religion, 27(90%) of the adults were belonged to Hindu religion, 1(3%) were belonged to Christian religion, 2(7%) were belonged to Muslim religion in the experimental group. In the control group, 30(100%) were belonged to Muslim religion. **(fig:4)**

Regarding education, 10(33%) of the adults had no formal education,4(13.3%) had completed their primary school education and 8(27%) had completed their high school education, 4(13.3%) had completed their higher secondary school education, 4(13.3%) had completed their graduate education in the experimental group. In the control group, 8(27%) of the adults had no formal education,16(53%) had completed their primary school education and 3(10%) had completed their high school education, 3(10%) had completed their higher secondary school education.**(fig:5)**

Regarding occupation, the highest percentage 14(46%) of the adults were coolie workers,5(17%) were government employees and 5(17%) were private employees,6(20%) were un employed in the experimental group. In the control group, 12(40%) were coolie workers,1(3.3%) were government employees and 1(3.3%)were private employees,16(53.3%) were un employed.**(fig:6)**

Regarding family monthly income, 18(60%) of the adults were belonged to the group of Rs.5000-6000,2(7%) were belonged to the group of Rs.6001-7000 and 3(10%) were belonged to the group of Rs.7001-8000,7(23%) were belonged to the group of above Rs.8001 in the experimental group. In the control group, 22(73%) were belonged to the group of Rs.5000-6000,3(10%) were belonged to the group of Rs.6001-7000 and 2(7%) were belonged to the group of Rs.7001-8000,3(10%) were belonged to the group of above Rs.8001.**(fig:7)**

Regarding type of family, 13(43%) of the adults were in joint family,17(57%) were in nuclear family in the experimental group. In the control group, 13(43%) were in joint family, 17(57%) were in nuclear family**.**

Regarding marital status, 29(97%) of the adults were married, 1(3%) were unmarried in the experimental group. In the control group, 28(93%) were married,2(7%) were unmarried.**(fig:8)**

Regarding dietary pattern, 5(17%) of the adults were belonged to vegetarian, 25(83%) were belonged to non vegetarian in the experimental group .In the control group, 6(20%) were belonged to vegetarian, 24(80%) were belonged to non vegetarian**.(fig:9)**

Regarding compliance of diabetic diet, 25(83%) of the adults were had compliance of diabetic diet, 5(17%) were not had compliance of diabetic diet in the experimental group. In the control group, 15(50%) were compliance of diabetic diet, 15(50%) were not had compliance of diabetic diet**.(fig:10)**

Regarding practice of exercise, 9(30%) of the adults were practicing exercise, 21(70%) were not practicing exercise in the experimental group. In the control group, 8(27%) were practicing exercise, 22(73%) were not practicing exercise.**(fig:11)**

Regarding family history of diabetes mellitus, 5(17%) of the adults had family history of diabetes mellitus, 25(83%) had no family history of diabetes mellitus in the experimental group. In the control group, 12(40%) had family history of diabetes mellitus, 18(60%) had no family history of diabetes mellitus.**(fig:12)**

Regarding duration of treatment for DM, 5(17%)   of the adults were belonged to below 1 year, 11(36%) were belonged to 1 year-2 year and 8(27%) were belonged to 3 year-4 year,6(20%) were belonged to above 5 years in the experimental group. In the control group, 2(7%) were belonged to below 1 year,6(20%) were belonged to 1 year-2 year and 9(30%) were belonged to 3 year-4 year,13(43%) were belonged to above 5 years.**(fig:13)**

Regarding frequent monitoring of blood glucose level,4(13%) of the adults were belonged to once in 15 days,17(57%) were belonged to once in a month and 8(27%) were belonged to once in 3 months,1(3%) were belonged to above 3 months in the experimental group. In the control group, 19(64%) were belonged to once in a month and 9(30%) were belonged to once in 3 months,2(6%) were belonged to above 3 months.**(fig:14)**

Regarding sources of health information, 8(27%) of the adults were had health information from television,3(10%) were had health information from radio and 2(7%) were had health information from newspaper,17(57%) were had health information from health workers in the experimental group. In the control group, 12(40%) were had health information from television, 2(7%) were had health information from newspaper,16(53%) were had health information from health workers.**(fig:15)**
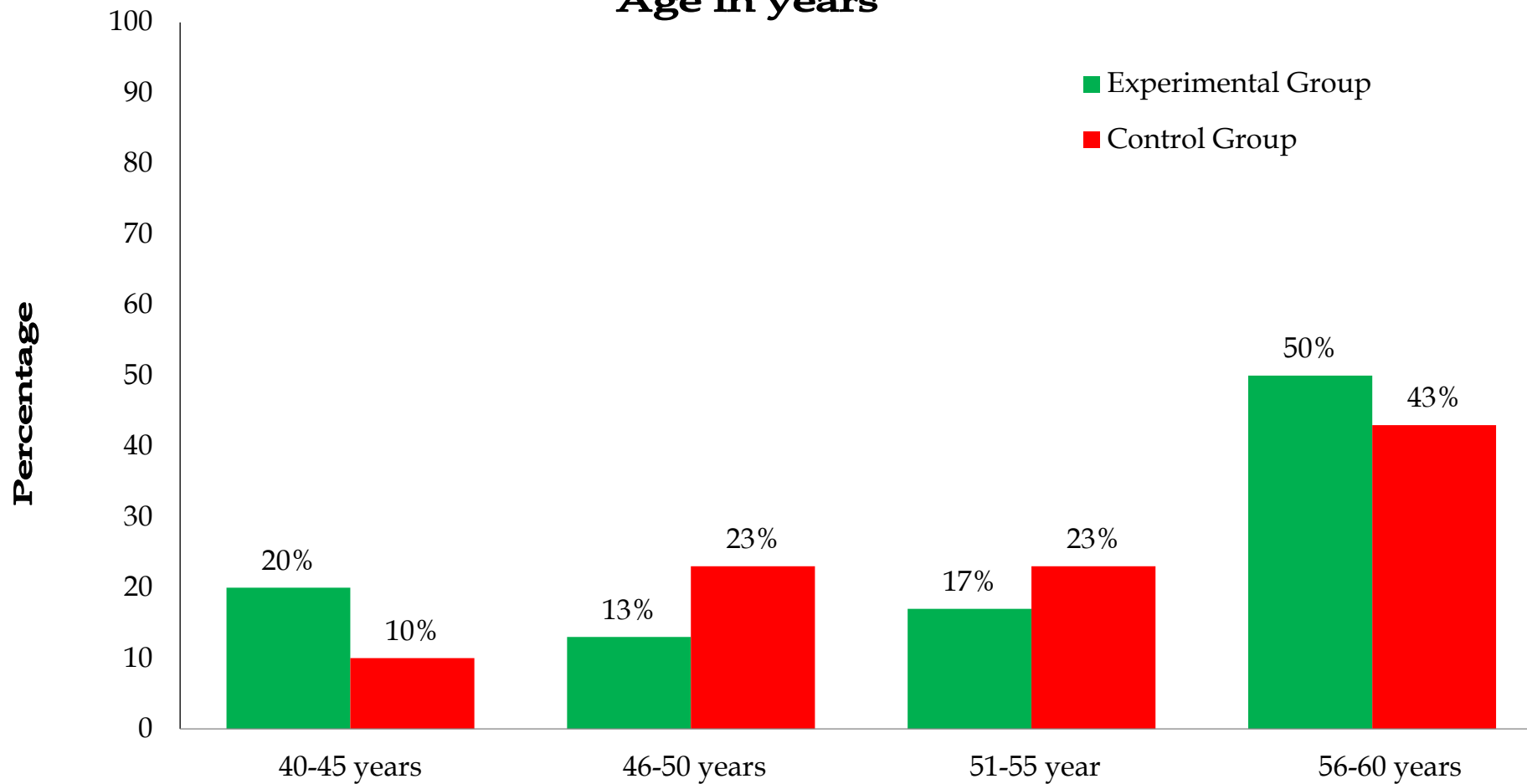
Fig : 3 Percentage distribution of adults according to their age in years in experimental group and control group
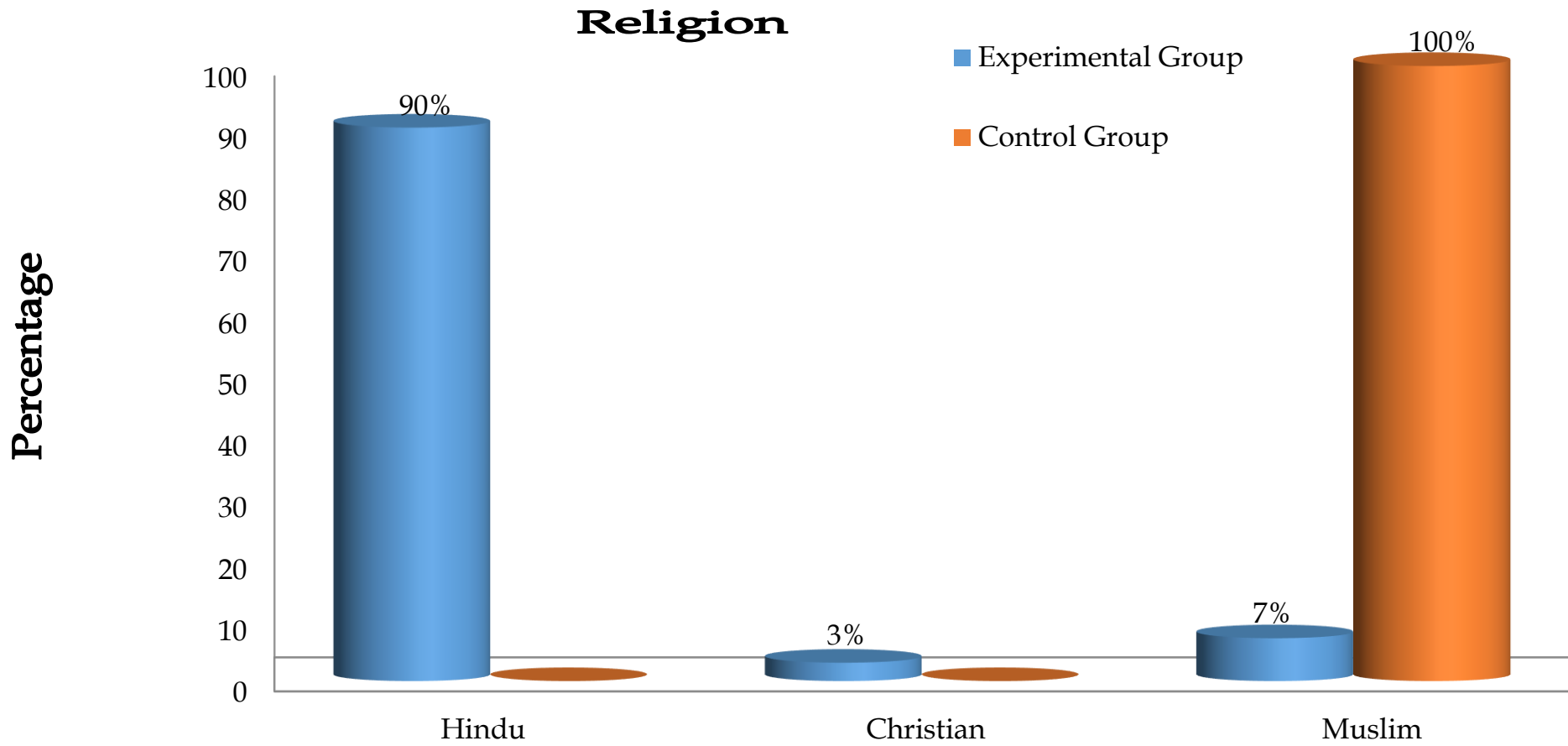
Fig : 4 Percentage distribution of adults according to their Religion in experimental group and control group
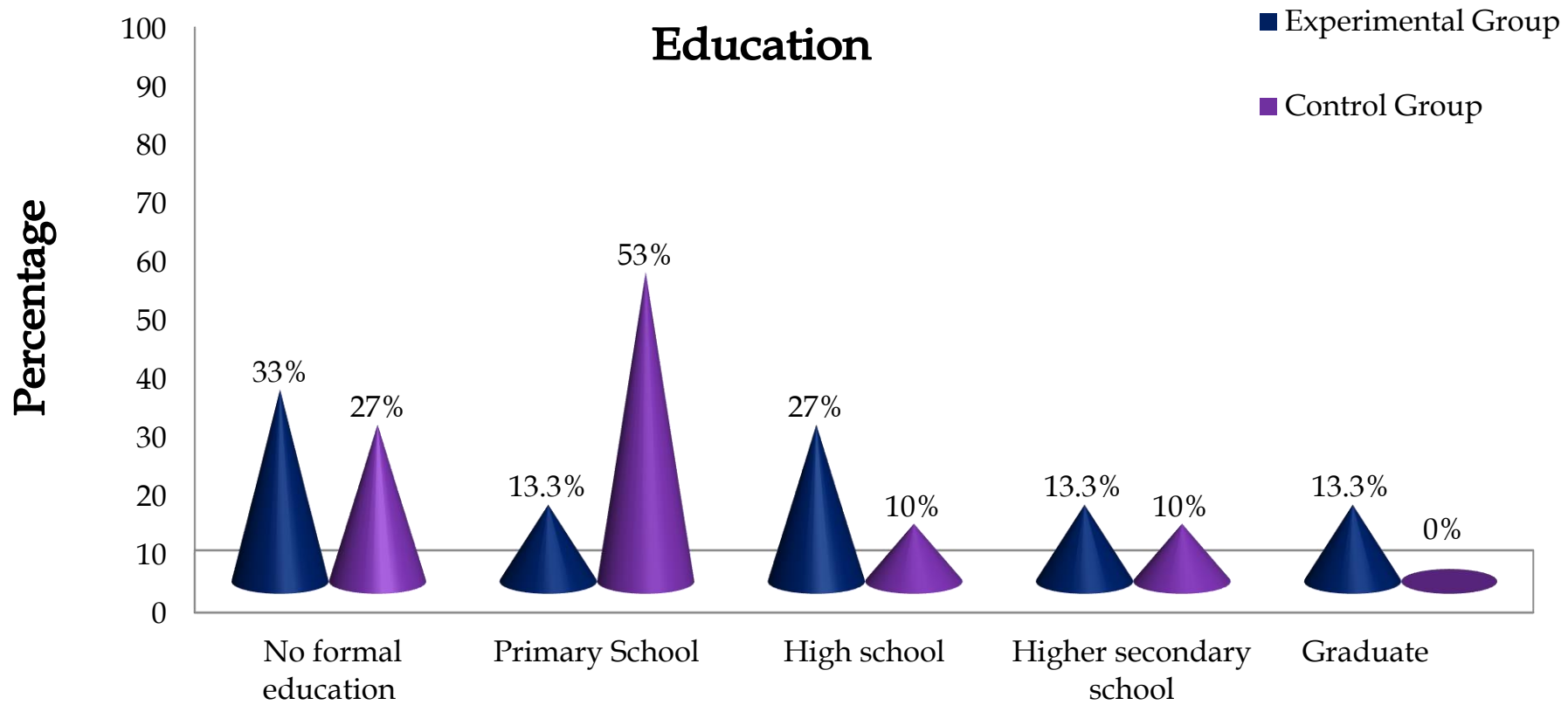
Education

Fig : 5 Percentage distribution of adults according to their Education in experimental group and control group

71
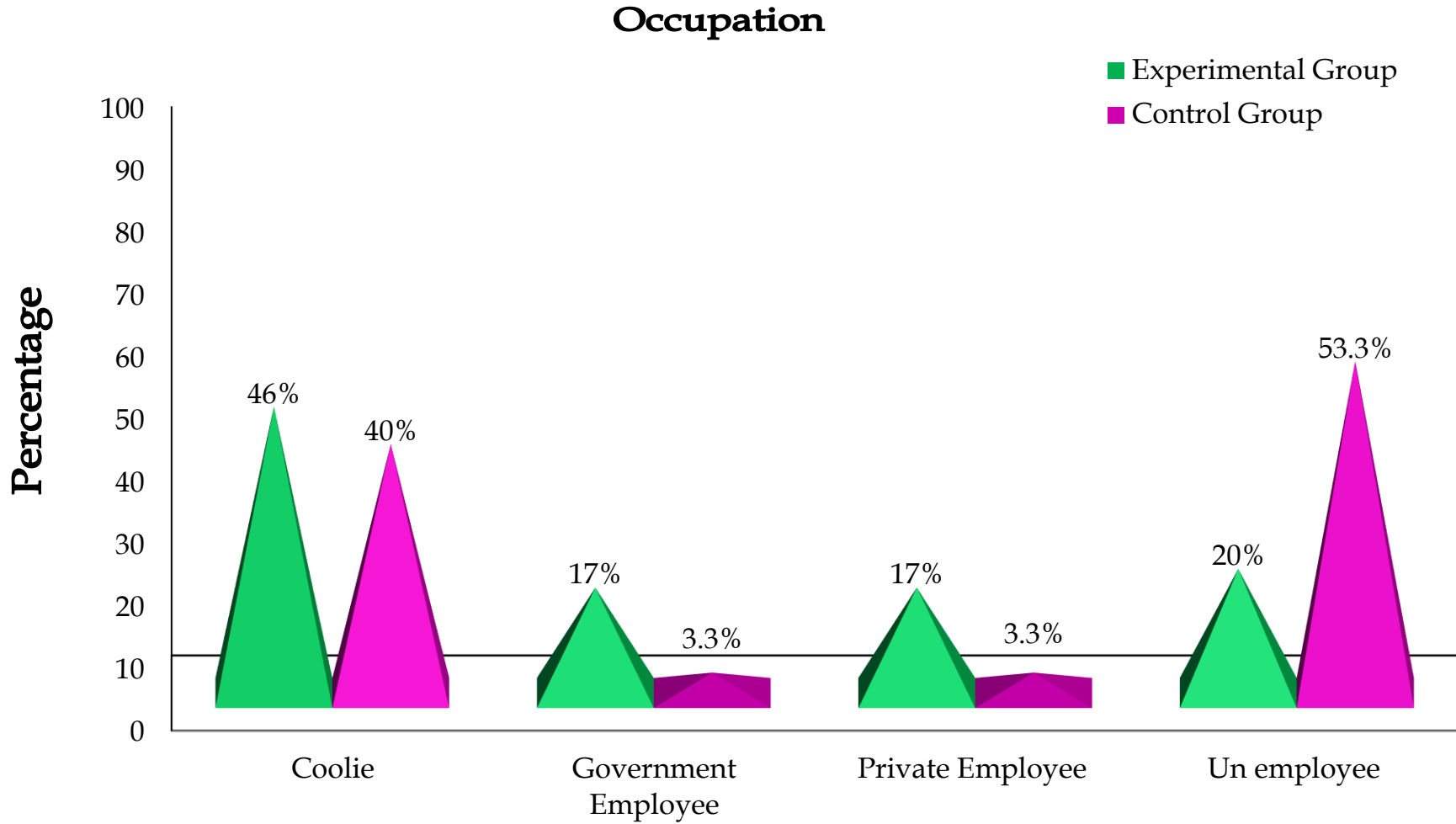
Fig : 6 Percentage distribution of adults according to their Occupation in experimental group and control group

Family monthly income

Percentage

- ■ Experimental Group
- ■ Control Group

	Rs.5000 – 6000	Rs.6001 – 7000	Rs.7001 – 8000	Above Rs.8001
Experimental Group	60%	7%	10%	23%
Control Group	73%	10%	7%	10%
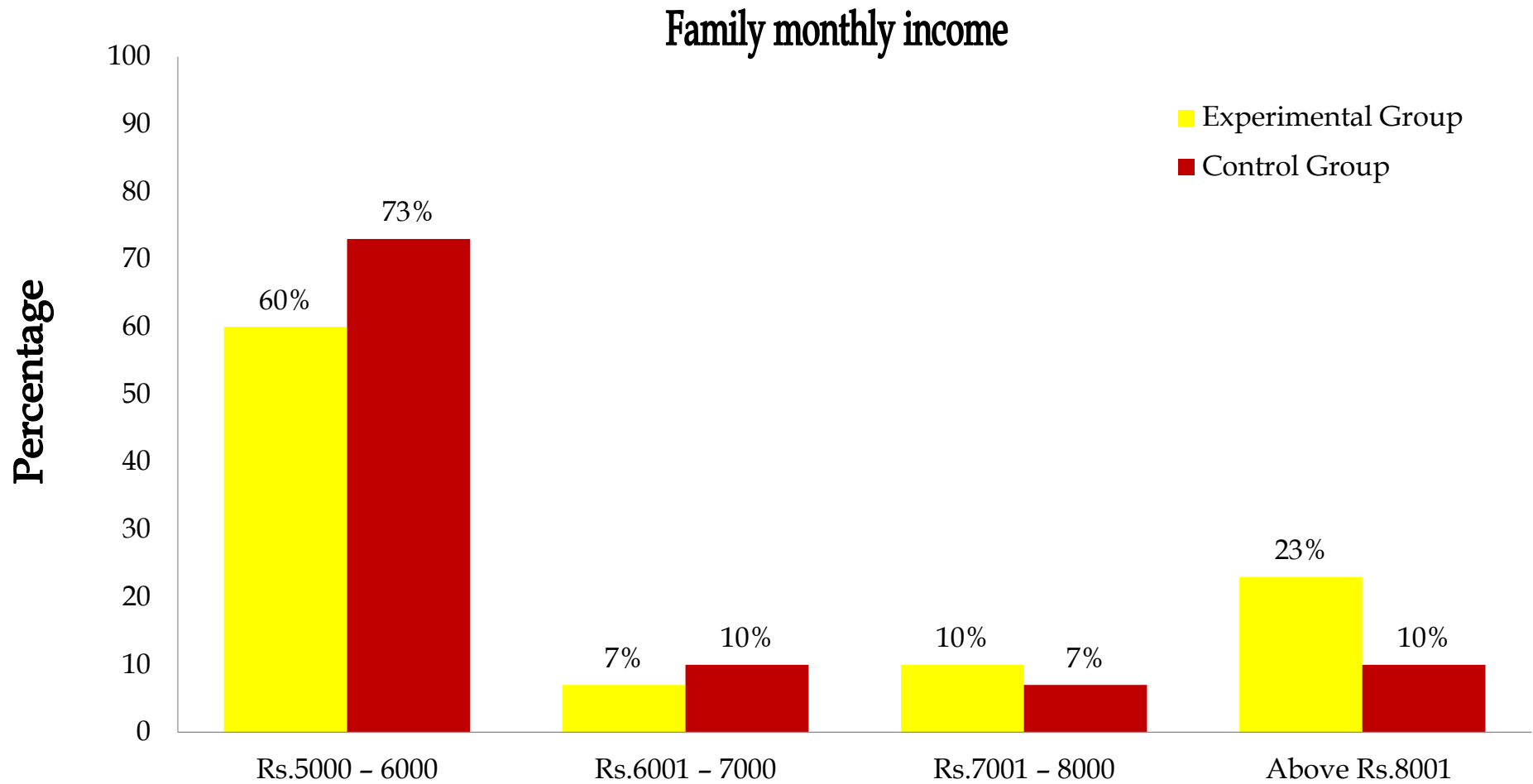
Fig : 7 Percentage distribution of adults according to their Family monthly income in experimental group and control group

Marital Status
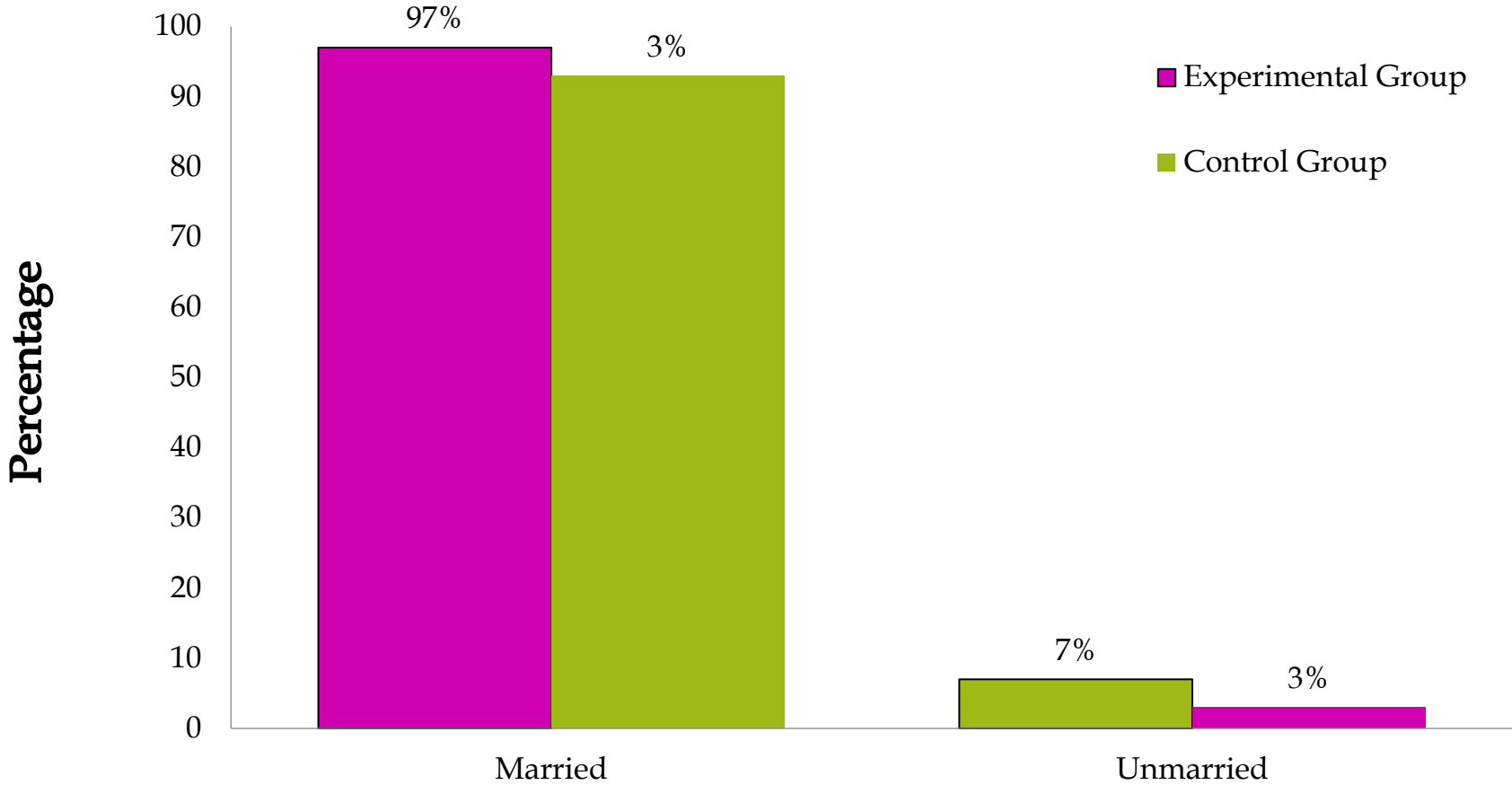
Fig : 8 Percentage distribution of adults according to their Marital Status in experimental group and control group
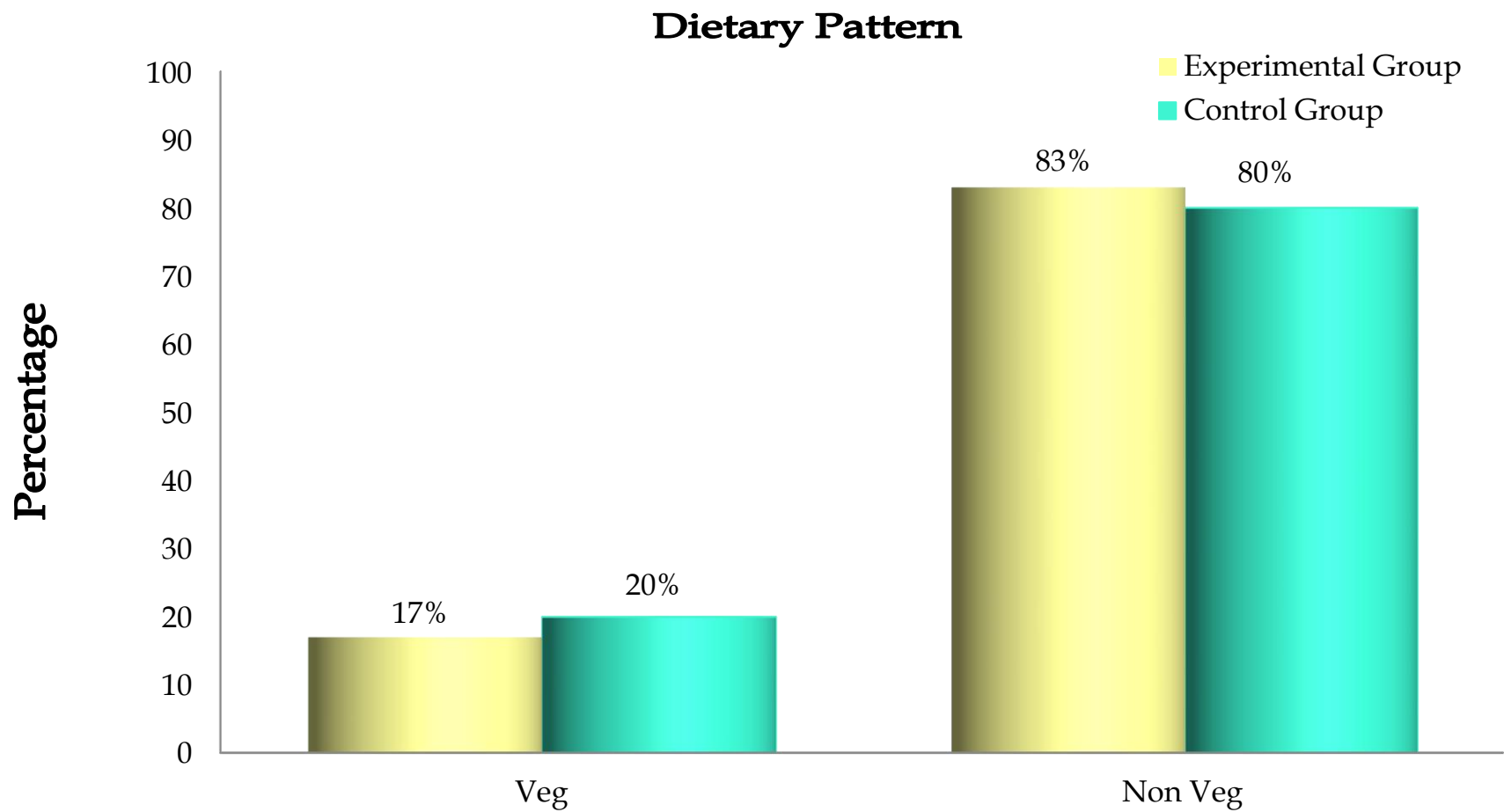
Dietary Pattern

Fig : 9 Percentage distribution of adults according to their Dietary Pattern in experimental group and control group

Compliance of diabetic diet
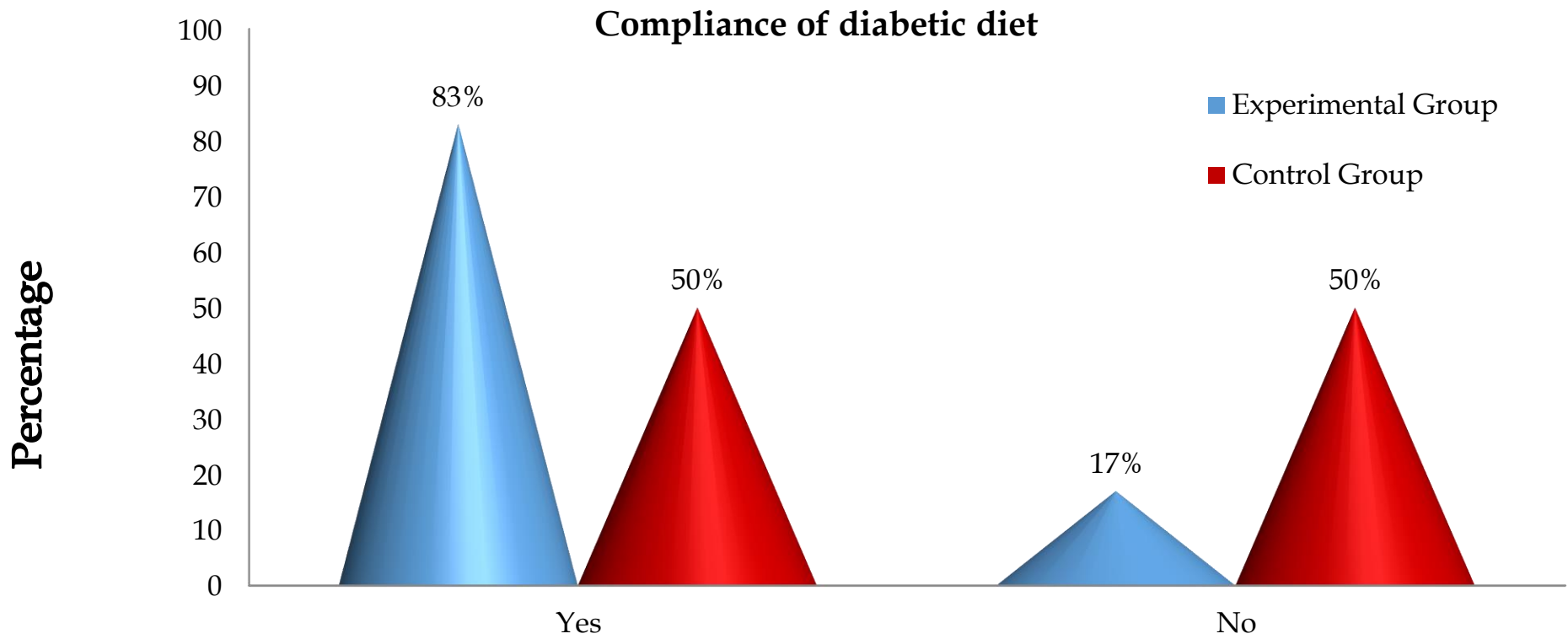
Fig : 10 Percentage distribution of adults according to their compliance of diabetic diet in experimental group and control group

Practice of Exercise

Percentage

- ■ Experiemental Group
- ■ Control Group

73%   70%   27%   30%

Yes   No
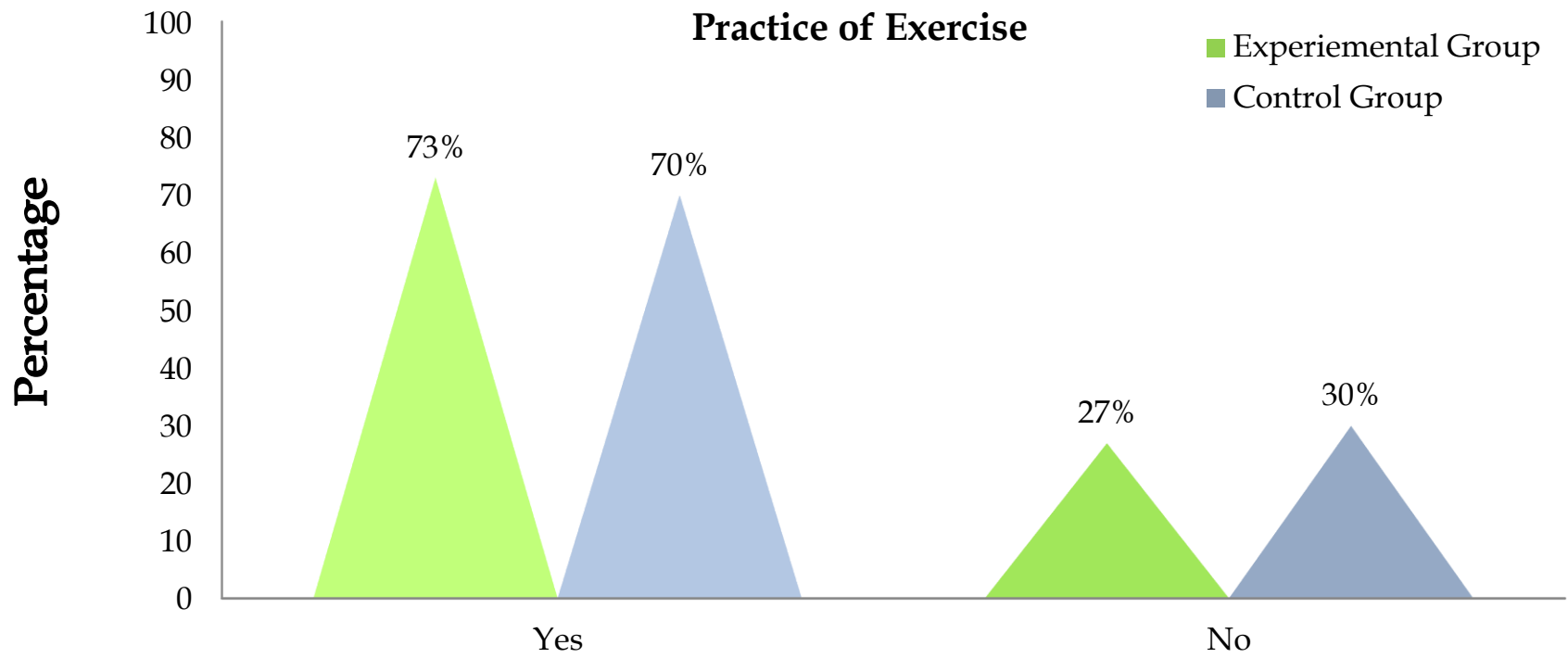
Fig : 11 Percentage distribution of adults according to their practice of exercise in experimental group and control group
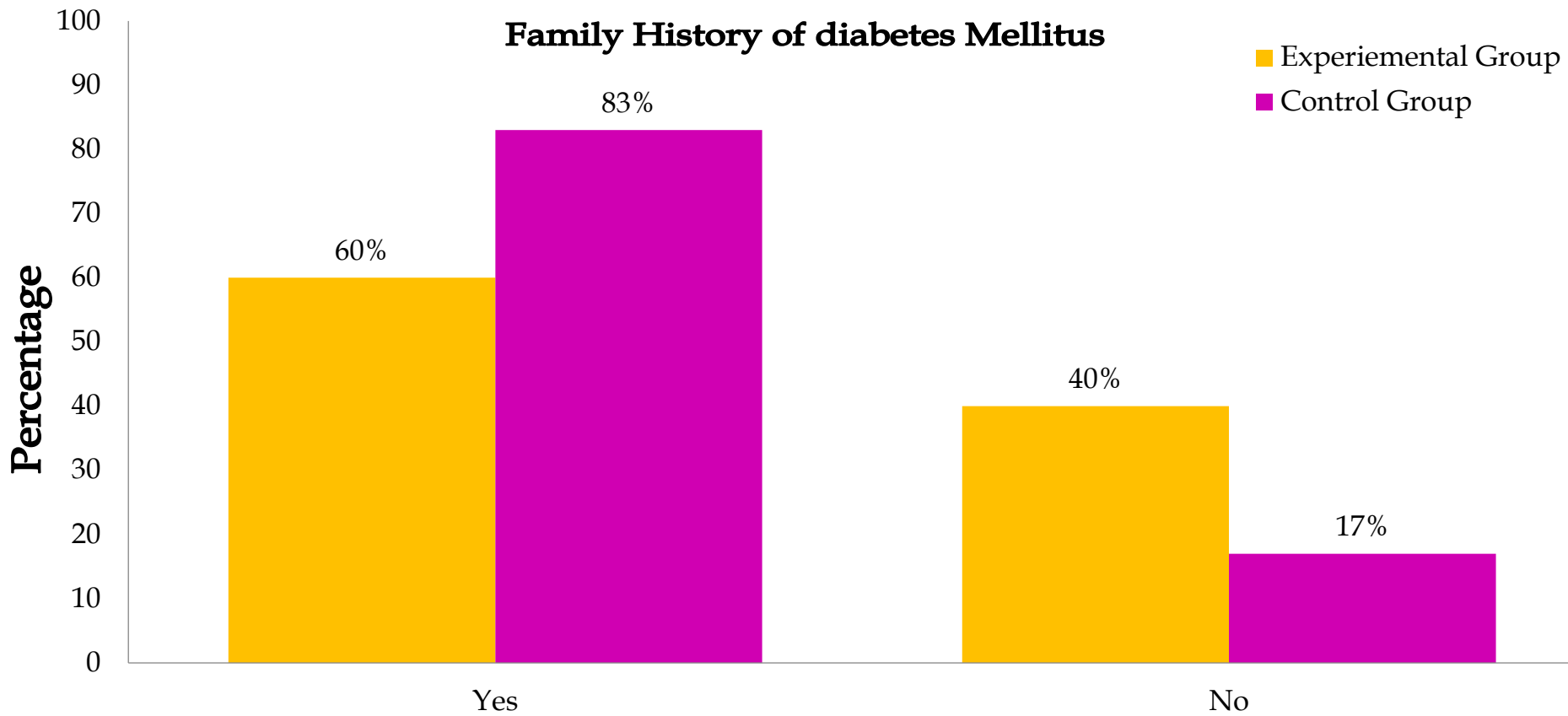
Fig : 12 Percentage distribution of adults according to their Family History of diabetes mellitus in experimental group and control group

Duration of Treatment for DM

Percentage distribution:
- Below 1 year: Experimental Group 17%, Control Group 7%
- 1 year – 2 years: Experimental Group 36%, Control Group 20%
- 3 years – 4 years: Experimental Group 27%, Control Group 30%
- Above 5 years: Experimental Group 20%, Control Group 43%

Legend: Experimental Group, Control Group
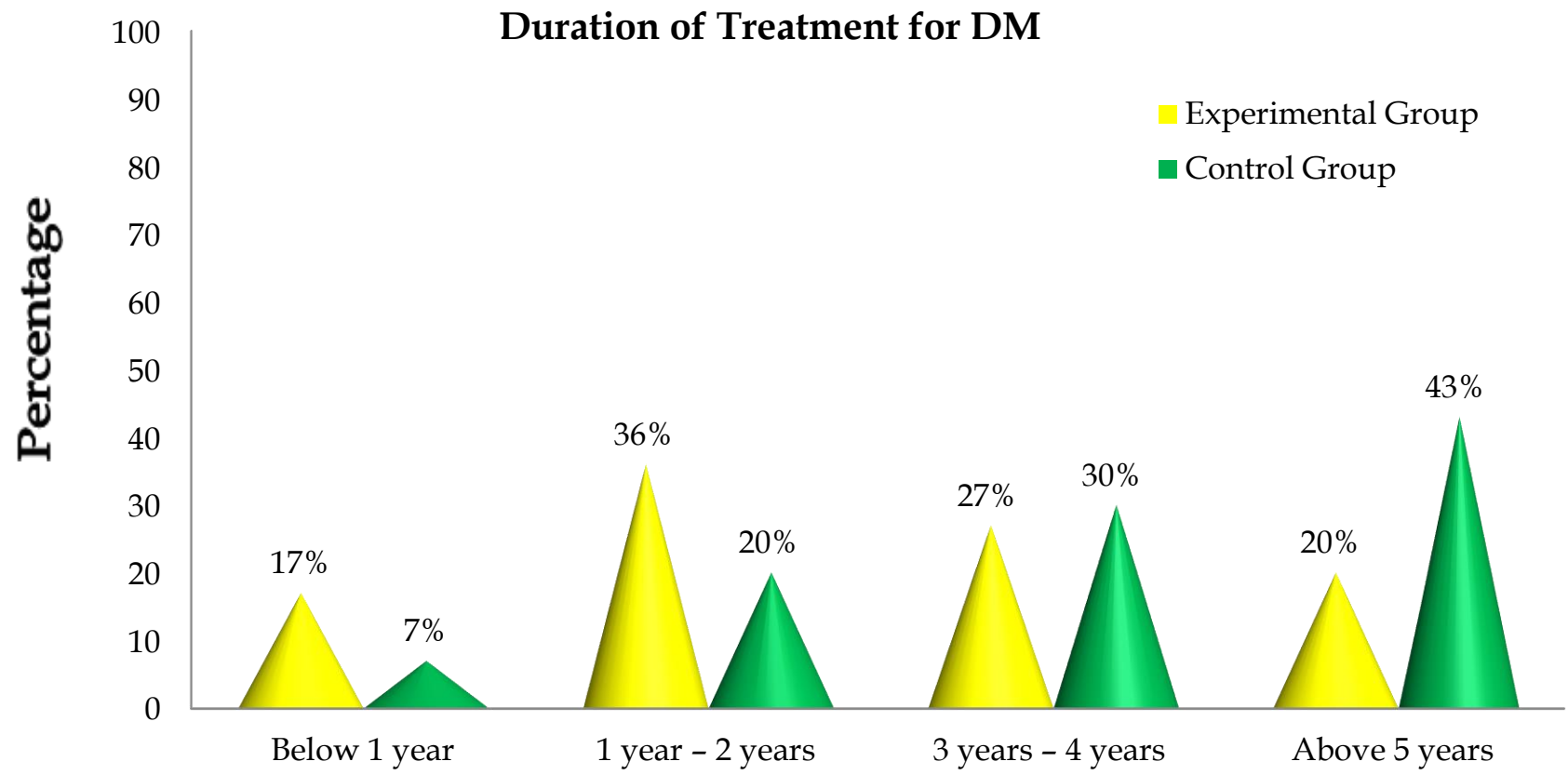
Fig : 13 Percentage distribution of adults according to their duration of Treatment for DM in experimental group and control group
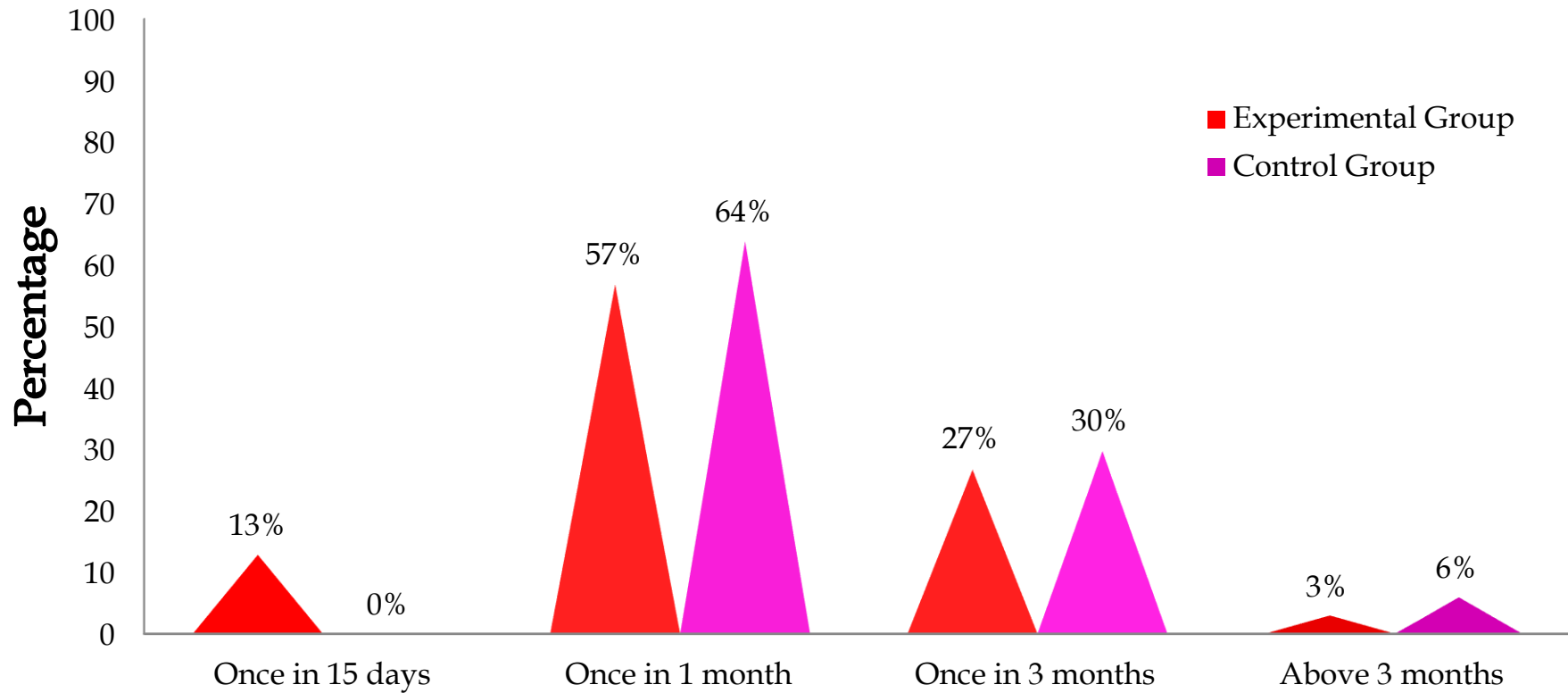
Fig : 14 Percentage distribution of adults according to their Frequent monitoring of blood glucose level in experimental group and control group
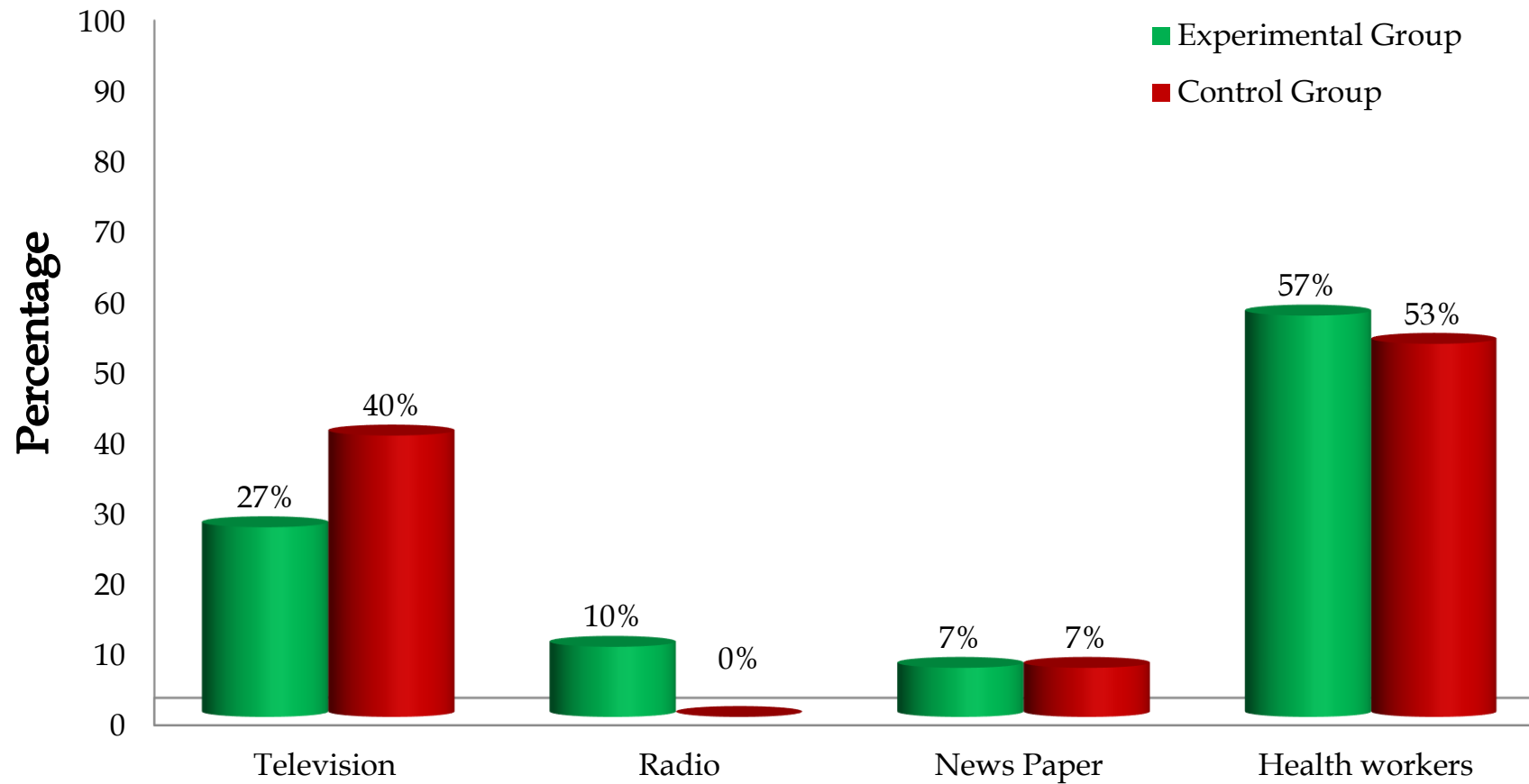
Fig : 15 Percentage distribution of adults according to their Source of health information in experimental group and control group

SECTION:B   ASSESS THE PRETEST   LEVEL OF BLOOD GLUCOSE AMONG ADULTS   WITH TYPE 2 DIABETES MELLITUS IN EXPERIMENTAL AND CONTROL GROUP.

Table 2: Frequency and percentage distribution of the pretest   level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

$n_1 = 30, n_2 = 30$

Blood glucose level	Pretest			
	Experimental Group n_1		Control Group n_2	
	F	%	F	%
Uncontrolled diabetes mellitus (Above 126 mg/dl)	30	100%	30	100%
Controlled diabetes mellitus (101-126 mg/dl)	-	-	-	-
Normal (70-100 mg/dl)	-	-	-	-

Table 2 depicts that in pretest level,30(100%) were uncontrolled diabetes mellitus and none of them had controlled diabetes mellitus and normal level in experimental group and in control group.

SECTION: C   **ASSESS THE POSTTEST LEVEL OF BLOOD GLUCOSE AMONG ADULTS WITH TYPE 2 DIABETES MELLITUS IN EXPERIMENTAL AND CONTROL GROUP.**

Table 3: Frequency and percentage distribution of posttest-I level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

$n_1 = 30, n_2 = 30$

Blood glucose level	Posttest-I			
	Experimental Group n_1		Control Group n_2	
	F	%	F	%
Uncontrolled diabetes mellitus (Above 126 mg/dl)	17	57%	30	100%
Controlled diabetes mellitus (101-126 mg/dl)	13	43%	-	-
Normal (70-100 mg/dl)	-	-	-	-

Table 3 depicts that, in posttest-I 17(57%) had uncontrolled diabetes mellitus and 13(43%) had controlled diabetes mellitus in experimental group. In control group, 30(100%) had uncontrolled diabetes mellitus and none of them had controlled diabetes mellitus and normal level.

Table 4: Frequency and percentage distribution of posttest-II level of blood glucose   among adults with type 2 diabetes mellitus in experimental and control group.

$n_1 = 30, n_2 = 30$

Blood glucose level	Posttest-II			
	Experimental Group n_1		Control Group n_2	
	F	%	F	%
Uncontrolled diabetes mellitus (Above 126 mg/dl)	-	-	25	83%
Controlled diabetes mellitus (101-126 mg/dl)	19	63%	5	17%
Normal (70-100 mg/dl)	11	37%	-	-

Table 4 depicts that , in posttest-II majority of 19(63%) had controlled diabetes mellitus   and 11(37%)   had normal blood glucose level in experimental group. In control group, 25(83%) had uncontrolled diabetes mellitus and 5(17%) had controlled diabetes mellitus.

SECTION- D: COMPARE THE PRETEST AND POSTTEST LEVEL OF BLOOD GLUCOSE AMONG ADULTS WITH TYPE 2 DIABETES MELLITUS IN EXPERIMENTAL AND CONTROL GROUP.

Table 5: Comparison of mean score, standard deviation, mean difference and paired 't' value of the pretest and posttest level of blood glucose in experimental group.

$n_1 = 30$

GROUP	PRETEST		POST TEST-I		POST TEST-II		PAIRED 't' VALUE		INFERENCE	TABLE VALUE
	M	SD	M	SD	M	SD	POST TEST I	POST TEST II		
Experimental group	178	43.1	135	19.2	107	13.01	7.398	9.882	S*	2.05

df =29   S* -Significance   P<0.05

Table 5 depicts that, the mean pretest score of blood glucose level in experimental group was 178 (SD± 43.1) and mean posttest-I score of blood glucose level was 135 (SD±19.2) and posttest-II mean score of blood glucose level in experimental group was 107 (SD ± 13.01) which showed that the mean posttest-I and posttest-II score was significantly lower than the mean pretest score in the experimental group. The paired 't' value of posttest-I and post test-II was 7.398 and 9.882 respectively which was significant at p<0.05 level of significance. This revealed that the ladies finger juice was effective in reducing blood glucose level.

Table 6: Comparison of mean score, standard deviation, mean difference and paired 't' value of the pretest and posttest level of blood glucose in control group.

$n_2 = 30$

GROUP	PRETEST		POST TEST-I		POST TEST-II		PAIRED 't' TEST		INFERENCE	TABLE VALUE
	M	S.D	M	S.D	M	S.D	POST TEST I	POST TEST II		
Control group	182	51.1	177	38.6	176	41.09	0.864	1.188	NS	2.05

df =29   NS – Not Significant   P<0.05

Table 6 depicts that the mean pretest score of blood glucose level in control group was 182 (SD± 51.1) and mean posttest-I mean score of blood glucose level was 177 (SD±38.6) and posttest-II mean score of blood glucose level was 176 (SD ± 41.09) in control group. The paired 't' value of posttest-I and posttest-II was 0.864 and 1.188 respectively which was not significant at p<0.05 level of significance.

SECTION- E: COMPARE THE POSTTEST LEVEL OF BLOOD GLUCOSE AMONG ADULTS WITH TYPE 2 DIABETES MELLITUS BETWEEN EXPERIMENTAL AND CONTROL GROUP.

Table 7: Comparison of mean score, standard deviation, mean difference and independent 't' value posttest level of blood glucose between experimental group and control group.

n =60

	GROUP	M	S.D	MEAN DIFFERENCE	INDEPENDENT 't' VALUE	INFERENCE	TABLE VALUE
POST TEST-I	Experimental Group	135	19.2	42	5.617	S*	2.02
	Control Group	177	38.6				
POST TEST-II	Experimental Group	107	13.01	69	8.843	S*	2.02
	Control Group	176	41.09				

df =58   **S* -Significant**   **p<0.05**

Table 7 depicts the mean posttest –I score of blood glucose level in experimental group was 135(SD±19.2) and in control group mean score was 177 (SD±38.6), the mean difference was 42.The independent 't' value was 5.617. The mean posttest –II score of blood glucose level in experimental group was 107(SD±13.01) and in control group mean score was 176 (SD±41.09), the mean difference was 69.The independent 't' value was 8.843, which was significant at $p<0.05$ level of significance. It showed that the ladies finger juice was effective in reducing blood glucose level among adult with type 2 diabetes mellitus.

SECTION-F: TO ASSESS THE KNOWLEDGE OF HYPOGLYCEMIA AMONG ADULTS WITH TYPE 2 DIABETES MELLITUS.

Table 8: Frequency and percentage distribution of level of knowledge among adults with type 2 diabetes mellitus in experimental and control group.

n=60

Level of knowledge	Experimental Group		Control Group	
	F	**%**	**F**	**%**
Adequate knowledge	-	-	-	-
Moderately adequate knowledge	21	70%	14	47%
Inadequate knowledge	9	30%	16	53%
Total	**30**	**100%**	**30**	**100%**

Table 8 depicts that, in majority 21(70%) of adults had moderately adequate knowledge, 9(30%) of adults had inadequate and none of them had adequate knowledge regarding hypoglycemia in experimental group. In control group, majority 16(53%) of adults had inadequate knowledge, 14(47%) of adults had moderately adequate knowledge and none of them had adequate knowledge regarding hypoglycemia.

Table 9: Area wise mean, Standard deviation of knowledge score of hypoglycemia   in experimental group.

Group	Area	Maximum Scores	Knowledge Scores	
			Mean	Standard Deviation
Experimental Group	Definition	2	0.80	0.92
	Causes and symptoms	6	1.90	1.92
	Diagnostic findings	4	1.43	1.00
	Treatment	5	2.83	0.94
	Prevention	9	3.53	1.43
	Complications	4	0.90	0.71
	Over all	30	11.92	7.48

Table 9 depicts the area wise mean, standard deviation of knowledge of hypoglycemia in experimental group .The mean score was 0.80(SD±0.92) for the area of definition,1.90(SD±1.92) for the area   of causes and symptoms,1.43(SD±1.00) for the area of diagnostic findings,2.83(SD±0.94) for the area of treatment,3.53(SD±1.43) for the area of prevention and 0.90(SD±0.71) for the area of complications. The highest mean score was 3.53 for the area of prevention, the lowest mean score was 0.80 for the area of definition and over all mean score were 11.92.

Table 10: Area wise mean, Standard deviation of knowledge score of hypoglycemia   in control group.

<div align="right">n₂=30</div>

$n_2=30$

Group	Area	Maximum Scores	Knowledge Scores	
			Mean	Standard Deviation
Control Group	Definition	2	0.80	0.80
	Causes and symptoms	6	2.17	1.88
	Diagnostic findings	4	1.53	1.00
	Treatment	5	2.76	1.04
	Prevention	9	4.16	1.80
	Complications	4	1.06	0.94
	Over all	30	13.26	8.1

Table 10 depicts the area wise mean, standard deviation of knowledge of hypoglycemia in control group. The mean score was 0.80(SD±0.80) for the area of definition,2.17(SD±1.88) for the area of causes and symptoms,1.53(SD±1.00) for the area of diagnostic findings,2.76(SD±1.04) for the area of treatment,4.16(SD±1.80) for the area of prevention and 1.06(SD±0.94) for the area of complications. The highest mean score was 4.16 for the area of prevention, the lowest mean score was 0.80 for the area of definition and over all mean score were 13.26.

SECTION-G: **To find out the association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.**

Table 11: Association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.

$n_1 = 30$

S. No	Demographic Variables	Un Standardized Coefficients		Standardized Coefficients	't' Value	Table Value	Inference
		Beta	Standard Error	Beta			
1.	Age a. 40-45 years b. 46-50 years c. 51-55 year d. 56-60 years	-5.777	3.170	-.540	-1.822	.092	**NS**
2.	Sex a. Male b. Female	-20.451	8.113	-.792	-2.521	0.026	**S***
3.	Religion a. Hindu b. Christian c. Muslim	4.225	8.122	0.172	0.520	0.612	**NS**

No.	Item						
4.	Education a. No formal education b. Primary School c. High school d.Higher secondary school e. Graduate	-8.757	2.595	-.961	-3.375	0.005	S*
5.	Occupation a. Coolie b. Government Employee c. Private Employee d. Un employed	4.448	2.798	0.415	1.590	0.136	NS
6	Family monthly income a. Rs.5000 – 6000 b. Rs.6001 – 7000 c. Rs.7001 – 8000 d. Above Rs.8001	1.964	3.450	0.196	0.569	0.579	NS
7	Type of Family a. Joint Family b. Nuclear Family	-10.675	8.074	-.413	-1.322	0.209	NS
8	Marital Status a. Married b. Unmarried c. Divorce	17.913	20.276	0.251	0.883	0.393	NS

9	Dietary pattern a. Veg b. Non – Veg	20.382	9.008	0.593	2.263	0.41	**S***
10	Compliance of diabetic diet a. Yes b. No	17.247	9.599	0.502	1.797	0.096	**NS**
11	Practice of exercise a. Yes b. No	-9.029	9.729	-.323	-.928	0.370	**NS**
12	Family History of diabetes Mellitus a. yes b. No	-3.012	11.635	-.080	0.259	0.800	**NS**
13	Duration of treatment for DM a. Below 1 year b. 1 year – 2 years c. 3 years – 4 years d. Above 5 years	0.840	4.320	0.065	0.194	0.849	**NS**
14	Frequent monitoring of blood glucose level a. Once in 15 days	3.346	6.527	0.184	0.513	0.617	**NS**

	b. Once in 1 month c. Once in 3 months d. Above 3 months						
15	Source of health information a. Television b. Radio c. News Paper d. Health workers	-.179	2.703	-.018	-.066	0.948	**NS**

S*-Significant　　NS-Non significant　P<0.05 level

Table:11 depicts that the Beta-Coefficient values were calculated to find out the association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.

The results reveal that, there was significant association found between posttest level of blood glucose and sex, education and dietary pattern. There was no significant association between posttest level of blood glucose and age, religion, occupation, family monthly income, type of family, marital status, compliance of diabetic diet, practice of exercise, family history of diabetes mellitus, duration of treatment for diabetes mellitus, frequent monitoring of blood glucose level and source of health information .

CHAPTER-V

DISCUSSION

The discussion chapter deals with description of sample characteristics and objectives of the study. The aim of this present study to assess the effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram.

Description of demographic variables of adults:

Regarding age, majority 15(50%) of the adults were in the age group of 56-60 years, 6(20%) were in the age group of 40-45 years,4(13%) were in the age group of 46-50 years,5(17%) were in the age group of 51-55 years and in experimental group. In control group ,majority 13(43%) of the adults were in the age group of 56-60 years,3(10%) were in the age group of 40-45 years,7(23%) were in the age group of 46-50 years, 7(23%) were in the age group of 51-55 years.

Regarding sex, majority 17(57%) of the adults were female and 13(43%) were male both in the experimental group and in the control group.

Regarding religion, majority 27(90%) of the adults were belonged to Hindu religion, 1(3%) were belonged to Christian religion, 2(7%) were belonged to Muslim religion in the experimental group. In the control group, 30(100%) were belonged to Muslim religion.

Regarding education, majority 10(33%) of the adults had no formal education,4(13.3%) had completed their primary school education and 8(27%) had completed their high school education, 4(13.3%) had completed their higher secondary school education, 4(13.3%) had completed their graduate

education in the experimental group. In the control group, majority 16(53%) of the adults had completed their primary school education, 8(27%) had no formal education and 3(10%) had completed their high school education, 3(10%) had completed their higher secondary school education.

Regarding occupation, the highest percentage 14(46%) of the adults were coolie workers, 5(17%) were government employees and 5(17%) were private employees, 6(20%) were un employed in the experimental group. In the control group, the highest percentage 16(53.3%) were un employed, 12(40%) were coolie workers, 1(3.3%) were government employees and 1(3.3%) were private employees.

Regarding family monthly income, majority 18(60%) of the adults were belonged to the group of Rs.5000-6000,2(7%) were belonged to the group of Rs.6001-7000 and 3(10%) were belonged to the group of Rs.7001-8000,7(23%) were belonged to the group of above Rs.8001 in the experimental group. In the control group, majority 22(73%) were belonged to the group of Rs.5000-6000, 3(10%) were belonged to the group of Rs.6001-7000 and 2(7%) were belonged to the group of Rs.7001-8000, 3(10%) were belonged to the group of above Rs.8001.

Regarding type of family, majority 17(57%) of the adults were in nuclear family, 13(43%) were in joint family in the experimental group. In the control group, majority 17(57%) were in nuclear family, 13(43%) were in joint family.

Regarding marital status, majority 29(97%) of the adults were married,1(3%) were unmarried in the experimental group. In the control group, majority 28(93%) were married,2(7%) were unmarried.

Regarding dietary pattern, majority 25(83%) of the adults were belonged to non vegetarian, 5(17%) were belonged to vegetarian in the experimental group.

In the control group, majority 24(80%) were belonged to non vegetarian, 6(20%) were belonged to vegetarian.

Regarding compliance of diabetic diet, majority 25(83%) of the adults were had compliance of diabetic diet, 5(17%) were not had compliance of diabetic diet in the experimental group. In the control group, 15(50%) were compliance of diabetic diet, 15(50%) were not had compliance of diabetic diet.

Regarding practice of exercise, majority 21(70%) of the adults were not practicing exercise, 9(30%) were practicing exercise in the experimental group. In the control group, majority 22(73%) were not practicing exercise, 8(27%) were practicing exercise.

Regarding family history of diabetes mellitus, majority 25(83%) of the adults had no family history of diabetes mellitus, 5(17%) had family history of diabetes mellitus in the experimental group. In the control group, majority 18(60%) had no family history of diabetes mellitus, 12(40%) had family history of diabetes mellitus,

Regarding duration of treatment for DM, majority 11(36%) of the adults were belonged to 1 year-2 year, 5(17%)   were belonged to below 1 year and 8(27%) were belonged to 3 year-4 year, 6(20%) were belonged to above 5 years in the experimental group. In the control group, majority 13(43%) were belonged to above 5 years, 2(7%) were belonged to below 1 year, 6(20%) were belonged to 1 year-2 year and 9(30%) were belonged to 3 year-4 year.

Regarding frequent monitoring of blood glucose level, majority 17(57%) of the adults were belonged to once in a month, 4(13%) were belonged to once in 15 days, and 8(27%) were belonged to once in 3 months, 1(3%) were belonged to above 3 months in the experimental group. In the control group,

majority 19(64%) were belonged to once in a month and 9(30%) were belonged to once in 3 months, 2(6%) were belonged to above 3 months.

Regarding sources of health information, majority 17(57%) of the adults were got health information from health workers, 8(27%) were got health information from television, 3(10%) were got health information from radio and 2(7%) were got health information from newspaper in the experimental group. In the control group, majority 16(53%) were got health information from health worker, 12(40%) were got health information from television, 2(7%) were got health information from newspaper.

The findings of the study as per the objectives were discussed under the following headings:

1. To assess the pretest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

2. To assess the posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

3. To compare the pretest and posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

4. To compare the posttest level of blood glucose among adults with type 2 diabetes mellitus between experimental and control group.

5. To assess the knowledge on hypoglycemia among adults with type 2 diabetes mellitus in experimental and control group.

6. To find out the association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.

FIRST OBJECTIVE:

To assess the pretest of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

The data analysis depicts that 30(100%) of the adult had uncontrolled diabetes mellitus and none of them had controlled diabetes mellitus and normal level in experimental group and in control group.

The findings were consistent with the findings of **Sumanth M Majgi.et.al.,(2013)** conducted a study on diabetes in rural Pondicherry, India: a population-based study of the incidence and risk factors. The results revealed that, 71 (5.8%) were found to have diabetes.

SECOND OBJECTIVE:

To assess the posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

The data analysis depicts that in posttest-I 17(57%) had uncontrolled diabetes mellitus and 13(13%) had controlled diabetes mellitus in experimental group. In control group 30(100%) had uncontrolled diabetes mellitus and none of them had controlled diabetes mellitus and normal level.

In posttest-II majority 19(63%) had controlled diabetes mellitus and 11(37%) had normal blood glucose level in experimental group. In control group 25(83%) had uncontrolled diabetes mellitus and 5(17%) had controlled diabetes mellitus.

THIRD OBJECTIVE :

To compare the pretest and posttest level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group.

The data analysis depicts that the mean and standard deviation for pre test and posttest level of blood glucose among adults were in experimental group was 178 (SD± 43.1) and mean posttest-I score of blood glucose level was 135 (SD±19.2) and posttest-II mean score of blood glucose level in experimental group was 107 (SD ± 13.01) which showed that the mean post test-I and posttest-II score was significantly lower than the mean pretest score in the experimental group. The paired 't' value was 7.398 and 9.882 which was significant at $p<0.05$ level of significance.

In control group the mean pretest score of blood glucose level was 182 (SD± 51.1) and mean posttest-I mean score of blood glucose level was 177 (SD±38.6) and posttest-II mean score of blood glucose level was 176 (SD ± 41.09) in control group. The paired 't' value for blood glucose was 0.864 and 1.188 which was not significant at $p<0.05$ level of significance.

The findings were consistent with the findings of **Nithiya.et,al., (2015),** conducted a study on blood glucose before and after lady's finger water among type 2 diabetic patients. In this study pretest mean score of blood glucose level was 270.35(SD±112.618) and posttest mean score of blood glucose level was 199.15(SD±97.763).The paired 't' value was 7.46 in experimental group. The mean posttest blood sugar was significantly less than mean pretest blood sugar. In control group pretest mean score of blood glucose level was 230.70(SD±87.787) and posttest mean score of blood glucose level was 219.75(SD±89.138).The paired 't' value was 2.176.

Hence, the hypothesis H_1- the mean posttest level of blood glucose was significantly lower than the mean pre test level of blood glucose in experimental group was accepted.

FOURTH OBJECTIVE :

To compare the posttest level of blood glucose among adults with type 2 diabetes mellitus between experimental and control group.

The data analysis depicts that the mean posttest –I score of blood glucose level in experimental group was 135(SD±19.2) and in control group mean score was 177 (SD±38.6), the mean difference was 42.The independent 't' value was 5.617. The mean posttest –II score of blood glucose level in experimental group was 107(SD±13.01) and in control group mean score was 176 (SD±41.09), the mean difference was 69.The independent 't' value was 8.843, which is significant at $p<0.05$ level of significance.

The findings were consistent with the findings of **Sarika Davis .et, al.,(2014)** conducted a study on effectiveness of Lady's Finger Juice in the Control of Blood Sugar Among Type 2 Diabetes Mellitus .The mean blood glucose in posttest-I(119±67.9) and posttest –II (189.4±67.2) in the experimental group. The mean difference was 37.The mean posttest -I (236±36.92), posttest –II (238.1±37.2) in the control group. The mean difference was 48.7.The un paired 't' value was 1.96 at 0.05 level of significance respectively.

Hence, the hypothesis H_2 - The mean posttest level of blood glucose in the experimental group is significantly lower than the mean posttest level of blood glucose in control group was accepted.

FIFTH OBJECTIVE :

To assess the knowledge of hypoglycemia among adults with type 2 diabetes mellitus in experimental and control group.

The data analysis depicts that in experimental group, majority 21(70%) of adults had moderately adequate knowledge, 9(30%) of adults had inadequate knowledge regarding hypoglycemia .In control group majority 14(47%) of adults had moderately adequate knowledge, 16(53%) of adults had inadequate knowledge regarding hypoglycemia.

The finding were consistent with the findings of **Ahmed G.Elzubier.,(2001)** conducted study on Knowledge of hypoglycemia by primary health care centers registered diabetic patients. The result revealed that, 361(35%) of subjects had good knowledge score of hypoglycemia, 678(65%) of subjects had a poor knowledge score of hypoglycemia.

The area wise mean, standard deviation of knowledge of hypoglycemia in experimental group the mean score was 0.80(SD±0.92) for the area of definition,1.90(SD±1.92) for the area of causes and symptoms,1.43(SD±1.00) for the area of diagnostic findings,2.83(SD±0.94) for the area of treatment,3.53(SD±1.43) for the area of prevention and 0.90(SD±0.71) for the area of complications. The highest mean score was 3.53 for the area of prevention, the lowest mean score was 0.80 for the area of definition and over all mean score were 11.92.

The area wise mean, standard deviation of knowledge of hypoglycemia in control group the mean score was 0.80(SD±0.80) for the area of definition, 2.17(SD±1.88) for the area of causes and symptoms,1.53(SD±1.00) for the area of diagnostic findings,2.76(SD±1.04) for the area of treatment,4.16(SD±1.80) for the area of prevention and 1.06(SD±0.94) for the area of complications. The highest mean score was 4.16 for the area of prevention, the lowest mean score was 0.80 for the area of definition and over all mean score were 13.26.

The finding were consistent with the findings of **Kiran Nagaraju. et al., (2013)** conducted a study to assess the Effectiveness of Structured Teaching Programme on Prevention of Microvascular and Macrovascular Complications Among Patients with Diabetes Mellitus in Selected Hospitals at Bangalore .The findings of the study reveals that aspect wise Mean Pretest and Posttest knowledge Score of experimental group. In the aspect of Microvascular Complications of DM, the mean was 22.4% and 82.4% with an enhancement of 60.0%. In the aspect of macrovascular complications of DM, the mean was 20.8% and 77.2% with an enhancement of 56.4%.

SIXTH OBJECTIVE:

To find out the association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group.

Beta coefficient value was calculated to find the association between the posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables. There was significant association found between posttest level of blood glucose and sex, education and dietary pattern in experimental group. There was no significant association between posttest level of blood glucose and age, religion, occupation, family monthly income, type of family, marital status, compliance of diabetic diet, practice of exercise, family history of diabetes mellitus, duration of treatment for diabetes mellitus, frequent monitoring of blood glucose level and source of health information in experimental group.

The study findings were consistent with the findings of **Sarika Davis. et, al.,(2014)** conducted a study on effectiveness of Lady's Finger Juice in the Control of Blood Sugar Among Type 2 Diabetes Mellitus. There was significant association between level of blood glucose and age, religion, education, income, family history of diabetes mellitus, treatment followed. There was no significant association between level of blood glucose and gender, occupation, duration of diabetes mellitus.

Hence, the hypothesis H$_3$ -There will be a significant association between the post test level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables in experimental group was accepted except for age, religion, occupation, family monthly income, type of family, marital status, compliance of diabetic diet, practice of exercise, family history of diabetes mellitus, duration of treatment for diabetes mellitus, frequent monitoring of blood glucose level and source of health information.

CHAPTER-VI
SUMMARY AND CONCLUSION

The chapter is discussed under five headings.

1.   Summary

2.   Conclusion

3.   Implications

4.   Recommendations

5.   Limitation

SUMMARY OF THE STUDY:

The aim of the study was assess the effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram. The design used for the present study was quasi experimental non equivalent control group pre test, post test design. The conceptual framework was based on **Wiedenbach's helping art of clinical nursing theory (1969)**.Sample size was 60 out of which 30 were in experimental group and 30 were in control group. The sample were selected by non probability purposive sampling technique and level of blood glucose and knowledge were assessed by glucometer and structured interview questionnaire.

The first 2 days morning, pretest fasting blood glucose level was checked by using glucometer and during the daytime demographic variables were collected from the experimental group. On the 2nd day evening the investigator had prepared the 250ml of ladies finger juice for each sample in experimental group. Instructions were given to the samples in experimental group regarding measures to be taken in hypoglycemia. From the third day morning onwards, the experimental group were asked to consume the ladies finger juice before breakfast for 15 days. Every day morning, the experimental group drank the ladies finger juice in empty stomach under the supervision of

the investigator. During day time knowledge on hypoglycemia was assessed by using structured interview questionnaire for the experimental group. It took 40-45 minutes for each sample. The posttest fasting blood glucose level was checked on 7th and 16th day after intervention for the experimental group. After the posttest, pamphlet on hypoglycemia was given to the experimental group. From next day onwards, for the control group, pretest fasting blood samples were taken and demographic variables were collected for 2 days. The first posttest fasting blood samples were taken on the 7th day. The 2nd posttest fasting blood samples were taken on the 16th day.During daytime the knowledge on hypoglycemia was assessed in control group. On the 16th day after taking the blood samples, the pamphlet on hypoglycemia was given to the control group also. Finally for all the 60 samples ladies finger seeds were given to grow it in their kitchen garden for their further use.

The collected data were analyzed and tabulated by using descriptive and inferential statistics.

MAJOR FINDINGS OF THE STUDY:

The major findings were, In experimental group, among the adults majority (50%) were in the age group of 56-60 years ,(20%) of the adults were in the age group of 40-45 years, (17%) were in the age group of 51-55 years ,(13%) were in the age group of 46-50 years. In control group, majority (43%) of the adults were in the age group of 56-60 years,(10%) were in the age group of 40-45 years,(23%) were in the age group of 46-50 years, (23%) were in the age group of 51-55 years.

In the experimental group and control group, majority (57%) of the adults were female and (43%) were male.

In the experimental group, majority (90%) of the adults was belonged to Hindu religion, (3%) were belonged to Christian religion, (7%) were belonged

to Muslim religion. In the control group (100%) were belonged to Muslim religion.

In the experimental group, majority (33%) of the adults had no formal education,(13.3%) had completed their primary school education and (27%) had completed their high school education, (13.3%) had completed their higher secondary school education, (13.3%) had completed their graduate education . In the control group, majority (53%) of the adults had completed their primary school education, (27%) had no formal education and (10%) had completed their high school education, (10%) had completed their higher secondary school education.

In the experimental group , the highest percentage (46%) of the adults were coolie workers,(17%) were government employees and (17%) were private employees,(20%) were un employees . In the control group, the highest percentage (53.3%) were un employees, (40%) were coolie workers,(3.3%) were government employees and (3.3%)were private employees.

In the experimental group, majority, (60%) of the adults were belonged to the group of Rs.5000-6000 family monthly income, (7%) were belonged to the group of Rs.6001-7000 and (10%) were belonged to the group of Rs.7001-8000,(23%) were belonged to the group of above Rs.8001 . In the control group, majority (73%) were belonged to the group of Rs.5000-6000 family monthly income, (10%) were belonged to the group of Rs.6001-7000 and (7%) were belonged to the group of Rs.7001-8000,(10%) were belonged to the group of above Rs.8001.

In the experimental group and control group, majority (57%) of the adults were in nuclear family , (43%) were in joint family.

In the experimental group, majority (97%) of the adults were married,(3%) were unmarried. In the control group, majority (93%) were married,(7%) were unmarried.

In the experimental group, majority (83%) of the adults were belonged to non vegetarian,(17%) were belonged to vegetarian. In the control group, majority (80%) were belonged to non vegetarian, (20%) were belonged to vegetarian.

In the experimental group, majority (83%) of the adults were had compliance of diabetic diet, (17%) were not had compliance of diabetic diet in the experimental group. In the control group, (50%) were compliance of diabetic diet, (50%) were not had compliance of diabetic diet.

In the experimental group, majority (70%) of the adults were not practicing exercise, (30%) were practicing exercise in the experimental group. In the control group, majority (73%) were not practicing exercise, (27%) were practicing exercise.

In the experimental group, majority (83%) of the adults had no family history of diabetes mellitus, (17%) had family history of diabetes mellitus .In the control group , majority (60%) had no family history of diabetes mellitus, (40%) had family history of diabetes mellitus.

In the experimental group, majority,(36%) of the adults were belonged to 1 year-2 year and (27%) were belonged to 3 year-4 year,(20%) were belonged to above 5 years, (17%) were belonged to below 1 year. In the control group ,majority (43%) were belonged to above 5 years ,(7%) were belonged to below 1 year,(20%) were belonged to 1 year-2 year and (30%) were belonged to 3 year-4 year.

In the experimental group, majority(57%) of the adults were belonged to once in a month , (13%) were belonged to once in 15 days and (27%) were belonged to once in 3 months,(3%) were belonged to above 3 months. In the control group, majority (64%) were belonged to once in a month, (30%) were belonged to once in 3 months and (6%) were belonged to above 3 months.

In the experimental group, majority (57%) of the adults were got health information from health workers,(27%) were got health information from television,(10%) were got health information from radio and (7%) were got health information from newspaper. In the control group, majority (53%) were got health information from health worker, (40%) were got health information from television, (7%) were got health information from newspaper.

With regard to level of blood glucose and the mean posttest-I score was 135 (SD±19.2) and posttest-II mean score of was 107 (SD ± 13.01) was lower than the mean pretest score was 178 (SD± 43.1). The paired 't' value for experimental group was 7.398 and 9.882 (table value=2.05) at p<0.05 level of significance, which showed that, there was a significant reduction in level of blood glucose in experimental group.

The mean posttest –I score of blood glucose level in the experimental group 135(SD±19.2) and in control group mean posttest score of blood glucose was 177 (SD±38.6), the mean difference was 42.The independent 't' value was 5.617. The mean posttest –II score of blood glucose level in experimental group was 107(SD±13.01) was significantly lower than the mean posttest score of blood glucose in control group 176 (SD±41.09), the mean difference was 69.The independent 't' value was 8.843(table value=2.02) which was significant at p<0.05 level of significance. This showed that there was a significant difference in the level of blood glucose between experimental group and control group.

In relation with area wise mean, SD of knowledge of hypoglycemia and the mean score was 0.80(SD±0.92) for the area of definition, 1.90 (SD±1.92) for the area of causes and symptoms, 1.43 (SD±1.00) for the area of diagnostic findings, 2.83(SD±0.94) for the area of treatment, 3.53(SD±1.43) for the area of prevention and 0.90(SD±0.71) for the area of complications and the highest mean score was 3.53 for the area of prevention, the lowest mean score was 0.80 for the area of definition and over all mean score were 11.92 in experimental group.

There was an association between posttest level of blood glucose among adults with type 2 diabetes mellitus and their selected demographic variables using Beta coefficient. The values revealed that there was significant association found between posttest level of blood glucose and sex, education and dietary pattern in experimental group.

CONCLUSION:

The present study was conducted to evaluate the effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram.. The independent 't' value blood glucose level was t=5.617 for post test-I, t=8.843 for posttest-II which were significant at p<0.05 level. The results of the study revealed that ladies finger juice is highly effective in reducing blood glucose level among adults with type 2 diabetes mellitus. This study concluded that the regular drinking of ladies finger juice helps to control the blood glucose level which turns into prevent complications.

IMPLICATIONS

The findings of the study have certain important implication for nursing service, nursing education, nursing administration, and nursing research.

Nursing service

❖ The nurse can organize and celebrate the world diabetes day and conduct rally to create awareness among the public.

❖ Nurse as the change agent, can introduce the ladies finger juice for the reduction of blood glucose level among adults.

Nursing education

❖ The nurse educators should conduct the workshop/seminars to update the knowledge of students on various home remedies used for management of type 2 diabetes mellitus so that they can educate peoples in the community.

❖ Imparting the concepts of home remedies in reducing the blood glucose level among adults to the nursing students.

Nursing administration

❖ The nurse administrators can conduct the medical camps in the community and create awareness about routine screening for diabetes related complications.

❖ The nurse administrators should organize and conduct awareness programmes in community areas regarding prevention of type 2 diabetes mellitus and its complications.

❖ The nurse administrators can organize the in-service education programme regarding various home remedies used for management of type 2 diabetes mellitus for the health care personnel in PHCs, sub centers and in hospitals.

Nursing research

❖ This study finding can be effectively utilized by the emerging researcher for their research purpose.

❖ Students can do mini project on other aspects like prevalence of hypoglycemia and prevention of complications.

RECOMMENDATIONS:

❖ Similar study can be replicated on a larger sample there by findings can be generalized to a large population.

❖ A comparative study can be conducted between rural and urban community.

❖ A longitudinal study can be conducted to assess the prevalence rate of type 2 diabetes mellitus and hypoglycemia.

❖ The comparative study can be conducted to assess the effectiveness of ladies finger juice with fenugreek in experimental and control group.

LIMITATIONS:

Few samples found it difficult to drink the water because of its mucous nature.

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88. http:// Richard J. Mahler.Type 2 Diabetes Mellitus: Update on Diagnosis, Pathophysiology, and Treatment.com

APPENDIX – A

ETHICAL COMMITTEE CLEARANCE CERTIFICATE

We, the Undersigned Chairman/ Members of the Ethical Committee, functioning in Bishop's College of Nursing, Dharapuram, have studied the proposed research Subject/ Project of Mrs. B. Shobana, I year M.Sc.,(N), a candidate applying for provisional registration and hereby give the certificate of clearance of approval by this Ethical Committee.

Topic: A study to assess the effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus in view of preparing a pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram.

Station:

Date:

Signature of the Chairman/ Members

of the Ethical Committee:

Name of the Institution:

Seal:

PRINCIPAL,
BISHOP'S COLLEGE OF NURSING,
C.S.I.MISSION COMPOUND,
DHARAPURAM-638 656,
TIRUPUR DISTRICT

BISHOP'S COLLEGE OF NURSING

(C.S.I. Trichy - Tanjore Diocese)
C.S.I. Mission Compound, DHARAPURAM - 638 656,
Tiruppur District.

☎ Off: 04258 - 221224
223962
Fax : 04258 221224
E - Mail : Principalbcndpm@gmail.com

Ref :

Date................................

Ethical Committee Members

Signature

1. Rt.Rev.Dr.Daniel James Srinivasan,
   B.A., Philosophy., B.D., P.G.Dip Theology,
   M.th., Ed.D.,
   Former Bishop, Theologian,
   C.S.I.Nagar,
   Dharapuram.

2. Mrs.Grace Srinivasan, B.Sc., M.A., M.Ed.,
   Former Bishop Amma,Rotarian,
   C.S.I.Nagar,
   Dharapuram.

3. Dr.Divamathi,M.B.B.S.,D.G.O.,
   Nivetha Hospital,
   114 Udumalpet Road,
   Dharapuram.

4. Mr.Dhanapal,M.Sc.,(Statistics)
   Statistician,
   82/12/2.Ganga Nagar,
   Pachapali Road,
   Railway Colony (PO),
   Erode.

5. Mr.Kalaichaezhian,B.A.,B.L., ML.,
   Advocate,
   Dharapuram.

6. Dr.Udayakumar,M.Com.,M.Phil.,P.hd.,
   Principal,
   Bishop Thorp College,
   Dharapuram.

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APPENDIX - B

LETTER SEEKING PERMISSION FOR CONDUCTING THE STUDY

BISHOP'S COLLEGE OF NURSING

(C.S.I. Trichy - Tanjore Diocese)
C.S.I. Mission Compound, **DHARAPURAM** - 638 656,
Tiruppur District.

☎ Off: 04258 - 221224
223962
Fax : 04258 221224
E - Mail : Principalbcndpm@gmail.com

Ref :

Date..............................

03.03.2016

To

Dr.Thenmozhi,
Block Medical Officer,
Dharapuram.

Respected Madam,

This is to certify that Mrs.Shobana is a bonafide student of our college doing her M.Sc., (N) programme II year. As part of her requirement, she has to do a project on "A Study to assess the effectiveness of ladies finger juice on level of blood glucose among adults with type II diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam, Dharapuram, Tirupur District."

Kindly permit her to carry out the main study in Nanchiyampalayam area.

Thanking you,

Yours faithfully,

PRINCIPAL,
BISHOP'S COLLEGE OF NURSING,
C.S.I.MISSION COMPOUND,
DHARAPURAM-638 656,
TIRUPUR DISTRICT

Block Medical Officer
Govt.Primary Health Centre
Pennapuram

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அனைத்திந்திய அண்ணா திராவிட முன்னேற்ற கழகம்

S.நாகேஸ்வரன் M.A.,M.L.R.C.LISC.,DNCC.,
நகர்மன்ற உறுப்பினர்,
வட தாரை, 4-வது வார்டு,
தாராபுரம் - 638 656. திருப்பூர் மாவட்டம்.
செல் : 80128 66071, 80981 40247

ஒப்புதல் :

உயர்திரு மேன்மை தங்கிய,
மேவு மருத்துவக் கல்லூரி,
CSI வளாகம்,
தாராபுரம், திருப்பூர் மாவட்டம்.

மதிப்பிற்குரிய மேன்மை தங்கிய விற்கு
வணக்கம், தங்கள் கல்லூரியில் பயிலும்
MSc (N) கிராம்பாம் ஆண்டு மாணவ
பா. ஜெரோனா கடந்த பிப்ரவரி 19 ம் தேதி
முதல்கொண்டு மார்ச் 9 ம் தேதி வரை நீரிழிவு
நோய் பற்றிய ஆய்வுரை தாராபுரம்
வட்டாரம் நஞ்சைப்பாளையத்தில் ஆய்வு செய்யும்
என்பதை தெரிவித்துக்கொள்கிறோம்.

(நன்றி !)

இப்படிக்கு,
9/3/16

S.நாகேஸ்வரன் M.A.,C.LISc.,DNCC.,
தாராபுரம் நகர்மன்ற உறுப்பினர் 4 வது வார்டு
தாராபுரம் நகராட்சி - 638656
திருப்பூர்மாவட்டம்.
செல் : 80128 66071

LETTER SEEKING EXPERTS OPINION CONTENT
FOR VALIDITY OF TOOLS

From

      Mrs.shobana.B,

      M.sc nursing II year,

      Bishop's College Of Nursing,

      Dharapuram.

  To

Sub: Requesting expert's opinion on content validity of the study to assess the effectiveness of ladies finger on blood glucose level among adults with type II diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram**.**

     A tool has been developed to assess the **effectiveness of ladies finger on blood glucose level among adults with type II diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram.** This has been developed as parts of research work.Kindly evaluate my tool and give your opinion and suggestion will enable the investigator to modify the tool. I will be thankful and grateful for your kind consideration.

                Thanking You

                         Your's Sincerely

                         (B.Shobana)

Encl:

 1.Certificate for content validity

2.Statement of the proplem,Objectives,Hypothesis

3.Decription of the tool and tool for data collection.

4.Self addressed envelope.

APPENDIX - D

COMMUNITY HEALTH NURSING

LIST OF EXPERTS OF VALIDATION

1. **Dr.Thenmozhi M.B.B.S,**
   Block medical officer,
   Ponnapuram

2. **Mrs.Anbu   M.Sc(N),**
   Reader,
   Community Nursing Department.
   White Memorial College Of Nursing,
   Attor, KK Dist.

3. **Dr.Mr.John Sam Arun Prabhu M.Sc(N),M.Sc.Psy,M.Phil (N),Ph.D,**
   Professor,
   Community Nursing Department.
   C.S.I Jeyaraj Annapackiam College Of Nursing,
   Jonespuram,Pasumalai,
   Madurai-4.

4. **Mrs.Shanmugapriya M.Sc(N),**
   Reader,
   Community Nursing Department.
   Abirami College Of Nursing,
   Seerapalayam(post)
   Coimbatore.

5. **Mrs.Amutha   M.Sc(N),**
   Reader,
   Community Nursing Department.
   KMCH College Of Nursing,
   Coimbatore.

APPENDIX - E

Certificate for validity

This is to certify that the tool on "**A study to assess the effectiveness of ladies finger on blood glucose level among adults with type II diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram** " has been validated by me and found appropriate with mentioned suggestions.

Block Medical Officer
Govt.Primary Health Centre
Ponnapuram

Signature:

Name:

Designation:

College:

Certificate for validity

This is to certify that the tool on "**A study to assess the effectiven**
of ladies finger on blood glucose level among adults with type II diabe
mellitus and in view of preparing pamphlet on hypoglycemia
Nanchiyampalayam at Dharapuram " has been validated by me and fou
appropriate with mentioned suggestions.

→ Better you can assess the
knowledge Regarding hyperglycem

Signature:

Name: ANBU MALAR·J

Designation: Reader.

College: white Memorial College of Nur

This is to certify that the tool on "**A study to assess the effectiveness of ladies finger on blood glucose level among adults with type II diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram**" has been validated by me and found appropriate with mentioned suggestions.

Signature:

Name: DR. Y. JOHN SAM ARUN PRABU

Designation: PROFESSOR
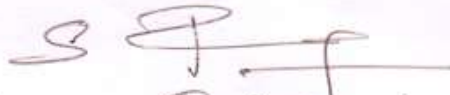
College: CSI JEYARAJ ANNAPACKIAM COLLEGE OF NURSING
JONESPURAM,
PASUMALAI
MADURAI - 4.

Certificate for validity

This is to certify that the tool on "A study to assess the effectiveness of ladies finger on blood glucose level among adults with type II diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram " has been validated by me and found appropriate with mentioned suggestions.

Signature: *S F*

Name: *Shanmuga Priya . S*

Designation: *Reader*

College: *Sree Abirami College of Nursing.*

Certificate for validity

This is to certify that the tool on "A study to assess the effectiveness of ladies finger on blood glucose level among adults with type II diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram " has been validated by me and found appropriate with mentioned suggestions.

Signature:

Name: Ms. Annaha Katfiresan

Designation: Asso. professor.

College: kmch con. coimebatore.

APPENDIX – F

CERTIFICATE FOR ENGLISH EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the dissertation work "A study to assess the effectiveness of ladies finger on blood glucose level among adults with type II diabetes mellitus and in view of preparing pamphlet on hypoglycemia in Nanchiyampalayam at Dharapuram", done by Mrs.B.Shobana, II year M.Sc Nursing student of Bishop's College Of Nursing, Dharapuram is edited for English language appropriateness by S. INBANATHAN MA., MPhil, MEd.,

Date:

Address:

Signature

S. INBANATHAN M.A.,M.Ed.,M.Phil.,
PG. Assistant in English
C.S.I. Girls Hr.Sec. School,
Dharapuram- 638 656.

APPENDIX – G

CERTIFICATE FOR TAMIL EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the dissertation work "A study to assess effectiveness of ladies finger on blood glucose level among adults with type diabetes mellitus and in view of preparing pamphlet on hypoglycemia Nanchiyampalayam at Dharapuram", done by Mrs.B.Shobana, II year M Nursing student of Bishop's College Of Nursing, Dharapuram is edited Tamil language appropriateness by D. SIRANJIVI MARY, M.A., MEd,

Date:
Address:

Signature

APPENDIX - H

A map showing various villages including Velayudampalayam, Thoppampatti, Varappalaiyam, Vaduga-Palaiyam, Veerajimangalam, Arpatti, Madathupalaiyam, Nanjayampalaiyam, Kolinjivadi, Kolathupalayam, Alampalaiyam, Dharapuram North, Chittaravutnam-Palayam, Nallampalayam, Chinna Puthur, Govindapuram, Dharapuram South, Chinnakkampalayam, Uttuppalaiyam, Dalayampathamam, Manakkadavu, Pond, Silampalaiyam, Alangiam, Kongur. Main Canal and Dindigul marked. Legend: Setting of the study.

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Demographic Data

1. Age
    - a. 40 - 45 years
    - b. 46-50 years
    - c. 51- 55 years
    - d. 56 - 60 years

2. Sex
    - a. Male
    - b. Female

3. Religion
    - a. Hindu
    - b. Christian
    - c. Muslim

4. Education
    - a. No formal education
    - b. Primary School
    - c. High School
    - d. Higher Secondary Education
    - e. Graduate

5. Occupation
    - a. Coolie
    - b. Government employee
    - c. Private Employee
    - d. Un employed

6. Family monthly income
    - a. Rs. 5,000 - Rs.6000
    - b. Rs.6001- Rs .7000
    - c. Rs.7001- Rs .8000
    - d. Above Rs. 8001

7. Type of Family
    - a. Joint Family
    - b. Nuclear Family

8. Marital Status
   a. Married
   b. Un Married
   c. Divorce

9. Dietary pattern

   a. Veg
   b. Non- Veg

10.Compliance of   diabetic diet

   a. Yes

   b. No

11. Practice of exercise

   a. Yes
    b. No

12. Family history of diabetes mellitus

   a. Yes
   b. No

13 .Duration of treatment for diabetes mellitus

   a. Below 1 year
   b. 1 year - 2 year
   c. 3 year - 4 year
   d. Above 5 years

14. Frequent Monitoring of blood glucose level

   a. Once in 15 days
   b. Once in 1 month
   c. Once in 3 month
   d. Above 3 month

15. Sources of health information

   a. Television
   b. Radio
   c. News Paper
   d. Health workers

Part – II

Fasting Blood glucose level according to **American Diabetes Association,2013.**

Blood Glucose Level	Range
Un controlled diabetes mellitus	Above 126mg/dl
Controlled diabetes mellitus	101-126 mg/dl
Normal	70-100 mg/dl

Part - III
Hypoglycemia

Multiple choice questions

1. What is meant by hypoglycemia?   Answer (B)

    a) Blood glucose above normal level

    b) Blood glucose drops below normal level

    c) Decrease insulin production

    d) Blood glucose in normal level

2. What is the range of blood glucose level in hypoglycemia?   Answer (B)

    a) Blood glucose 70 to 120 mg /dl

    b) Blood glucose 60 to 70 mg /dl

    c) Blood glucose 70 to 140 mg /dl

    d) Blood glucose above 180mg /dl

3. What is meant by severe hypoglycemia?   Answer (B)

    a) Blood glucose above 120 mg /dl

    b) Blood glucose below 45 mg /dl

    c) Blood glucose below 70 mg /dl

    d) Blood glucose above 70mg /dl

4. What is the risk factor of hypoglycemia?   Answer (C)

    a) Obesity

    b) Malnutrition

    c) Poor diet intake

    d) Accident

5. What is the common cause of hypoglycemia ?   Answer (D)

    a) Liver disease

    b) Over dose of Iron tablets

    c) Respiratory infections

    d) Over dose of diabetic medication

6. Which medication can cause hypoglycemia?   Answer (B)

    a) Metformin

    b) Glibizide

    c) Miglitol

    d) Neurobion

7. What is the early sign of hypoglycemia?   Answer (A)

    a) Sweating

    b) Fever

    c) Vomiting

    d) Palpitation

8. What is the night time symptom of hypoglycemia?   Answer (D)

    a. Dysneoa

    b. Tachycardia

    c. Anxiety

    d. Damp bed clothes

9. What is the diagnostic test for hypoglycemia?   Answer (D)

    a. Urinalysis

    b. History collection

    c. Physical examination

    d. Blood glucose

10. What is the fasting normal blood glucose level?   Answer (A)

    a. 70 to 100 mg /dl

    b. 80 to 120 mg /dl

    c. 80 to 100 mg /dl

    d. below 180 mg /dl

11. What is the post prandial normal blood glucose level?   Answer (C)

    a. above 180 mg   /d1

    b. 70 to 140 mg / d1

    c. below 140 mg /d1

    d. 70 to 100 mg /d1

12. What is the random   blood glucose level?   Answer (B)

    a.70 - 130 mg /d1

    b. 79-140 mg /dl

    c.80 - 120 mg /d1

    d. below 200 mg /dl

13. What is the treatment of hypoglycemia?   Answer (A)

    a. Plan new schedule for medication

    b. Increase the physical activity

    c. Decrease the intake of diet

    d. Increase the intake of diabetic medication

14. What is the medical treatment of hypoglycemia?   Answer (A)

    a. Glucagon

    b. Metformin

    c. Miglitol

    d. Insulin

15. What is the immediate treatment of hypoglycemia?   Answer (C)

    a. Taking diabetic medication

    b. Physical exercise

    c. Taking one table spoon of sugar or honey

    d. Taking fibre rice diets

16. What is the treatment for blood glucose level when it is   Answer (B)

   50 to 70 mg/d1?

     a. Taking oil foods

     b. Taking 10 to 15 grams of Carbohydrates (4 table spoon of sugar)

     c. Taking spicy foods

     d. Taking fibre rice diets

17. What is the treatment for severe hypoglycemia when the blood   Answer (B)

   glucose below 50 mg /d1?

     a. Taking diabetic medication

     b. Taking 20 to 30 grams of Carbohydrate (1 cup of juice)

     c. Physical exercise

     d. Taking diabetic mediation

18. What is the preventive measure for hypoglycemia?   Answer (A)

     a. Plan meals for every 4 to 5 hours

     b. Increase intake of diabetic medication

     c. Taking fibre rich diets

     d. Physical activity

19. Which type of diet will help to treat hypoglycemia ?   Answer (B)

     a. Fibre rich diets

     b. CHO rich diets

     c. Spicy foods

     d. Oil foods

20. What is the preventive measure to be taken before driving?   Answer (A)

     a. To check the blood glucose level before driving

     b. Taking diabetic medication before driving

     c. Taking fibre rich diet before driving

     d. Do physical activity before driving

21. What is the time duration for occurring hypoglycemia after the   Answer (A)

strenuous physical activity ?

a. Within 24 hours

b. Within 36 hours

c. Within 48 hours

d. Within 72 hours

22. What is the preventive measure to be taken before physical exercise?   Answer (D)

a. Taking diabetic medication

b. Taking fat rich diets

c. Skipping a meal

d. To keep biscuits/sweetners ready

23. When to seek medical care for hypoglycemia?   Answer (B)

a. Abdomen pain and vomiting

b. Headache and nervousness

c. Bradycardia and anxiety

d. Confusion and fever

24. How to prevent further attack of hypoglycemia?   Answer (C)

a. Increase intake of diabetic medication

b. Avoiding CHO diet

c. Self monitoring   of blood glucose level

d. Taking fibre rich diets

25. What is the safety measure for diabetic clients?   Answer (A)

a. Always carrying an ID card

b. Carrying tablets along with them

c. Increase intake of fibre rich diets

d. Increase intake of diabetic medication

26. What to do during an episode of hypoglycemia?   Answer (B)

    a. Eat wheat foods

    b. Eat food at regular at time

    c. Take diabetic medications

    d. Eat spicy foods

27. Which organ is getting energy from glucose?   Answer (D)

    a. Liver

    b. Heart

    c. Lungs

    d. Brain

28. What is the immediate complication of hypoglycemia ?   Answer (C)

    a. Renal failure

    b. Pyelonephritis

    c. Seizures

    d. Nephropathy

29. What is the late complication of hypoglycemia ?   Answer (B)

    a. Infertility

    b. Death

    c. Liver failure

    d. Hyperthyrodism

30. What is the effect of over treatment of hypoglycemia ?   Answer (B)

    a. Sepsis

    b. Hyperglycemia

    c. Retinopathy

    d. Convulsions

பகுதி - அ

சுய குறிப்பேடுகள்

1.   வயது

      அ. 40-45 ஆண்டுகள்

      ஆ. 46-50 ஆண்டுகள்

      இ. 51-55 ஆண்டுகள்

      ஈ. 56-60 ஆண்டுகள்

2.   பாலினம்

      அ. ஆண்

      ஆ. பெண்

3.   மதம்

      அ. இந்து

      ஆ. கிறிஸ்துவர்

      இ. இஸ்லாமியர்

4.   கல்வி

      அ. அடிப்படை கல்வி இல்லாமை

      ஆ. ஆரம்பப்பள்ளி

      இ. மேல்நிலைப்பள்ளி

      ஈ. உயர்நிலைப்பள்ளி

      உ. பட்டதாரி

5.   தொழில்

      அ. கூலி

      ஆ. அரசாங்க ஊழியர்

      இ. தனியார் ஊழியர்

      ஈ. வேலையில்லாதவர்

6. குடும்ப மாத வருமானம்

   அ. ரூ.5,000 - ரூ.6,000

   ஆ. ரூ.6001 - ரூ. 7000

   இ. ரூ.7001 - ரூ.8000

   ஈ. ரூ.8001க்கும் மேல்

7. எந்த வகையான குடும்பம்

   அ. கூட்டுக்குடும்பம்

   ஆ. தனிக்குடும்பம்

8. திருமண நிலை

   அ. திருமணமானவர்

   ஆ. திருமணமாகாதவர்

   இ. விவாகரத்து

9. உணவு முறை

   அ. சைவம்

   ஆ. அசைவம்

10. நீரழிவு நோயின் உணவு முறையை எடுத்துக் கொள்பவர்

   அ. ஆம்

   ஆ. இல்லை

11. உடற்பயிற்சி

   அ. ஆம்

   ஆ. இல்லை

12. பரம்பரை வழியாக நீரழிவு நோய்

   அ. ஆம்

   ஆ. இல்லை

13. எத்தனை வருடமாக நீரழிவு நோய்க்கு சிகிச்சை பெற்று வருகிறார்கள்?

    அ. 1 வருடத்திற்கும் குறைவாக

    ஆ. 1 வருடம் முதல் 2 வருடம்

    இ. 3 வருடம் முதல் 4 வருடம்

    ஈ. 5 வருடத்திற்கு மேல்

14.   அடிக்கடி இரத்தத்தின் சர்க்கரையின் அளவை பரிசோதனை செய்பவரா?

    அ. பதினைந்து நாளுக்கு ஒருமுறை

    ஆ. மாதத்திற்கு ஒருமுறை

    இ. மூன்று மாதத்திற்கு ஒரு முறை

    ஈ. மூன்று மாதத்திற்கு மேல்

15. நலவாழ்வு தகவல்கள் கிடைக்கக்கூடிய வழிகள்

    அ. தொலைக்காட்சி

    ஆ. ரேடியோ

    இ. செய்தித்தாள்

    ஈ. நலவாழ்வு பணியாளர்கள்

பகுதி - இ

இரத்தத்தில் சர்க்கரையின் அளவு குறைவு

கீழ்க்காணும் வினாக்களுக்கு பதில் அளிக்கவும்

1. இரத்தத்தில் சர்க்கரையின் அளவு குறைவு என்றால் என்ன?

      அ) இரத்தத்தில் சர்க்கரையின் அளவு இயல்பான நிலையை விட அதிகமாக இருத்தல்

      ஆ)இரத்தத்தில் சர்க்கரையின் அளவு இயல்பான நிலையை விட குறைவாக இருத்தல்

      இ)இன்சுலின் அளவு குறைவாக சுரத்தல்

      ஈ)இரத்தத்தில் சர்க்கரையின் அளவு இயல்பான நிலையில் இருத்தல்

2. இரத்தத்தில் சர்க்கரையின் குறைவான அளவு என்ன ?

      அ) இரத்தத்தில் சர்க்கரையின் அளவு 70 முதல் 120 வரை

      ஆ) இரத்தத்தில் சர்க்கரையின் அளவு 60 முதல் 70 வரை

      இ) இரத்தத்தில் சர்க்கரையின் அளவு 70 முதல் 140 வரை

      ஈ) இரத்தத்தில் சர்க்கரையின் அளவு 180க்கும் அதிகமாக இருத்தல்

3. கீழ்க்கண்டவற்றில் இரத்தத்தில் சர்க்கரையின் அளவு குறைவில் மிகவும் மோசமான நிலையின் அளவு என்ன?

      அ) இரத்தத்தில் சர்க்கரையின் அளவு 120க்கும் அதிகமாக இருத்தல்

      ஆ) இரத்தத்தில் சர்க்கரையின் அளவு 45க்கும் குறைவாக இருத்தல்

      இ) இரத்தத்தில் சர்க்கரையின் அளவு 70க்கும் குறைவாக இருத்தல்

      ஈ) இரத்தத்தில் சர்க்கரையின் அளவு 70க்கும் அதிகமாக இருத்தல்

4. கீழ்க்கண்டவற்றில் எந்த வகையான காரணியானது இரத்தத்தில் சர்க்கரையின் அளவைக் குறைக்கிறது?

      அ) உடல் பருமன்

      ஆ) ஊட்டச்சத்து குறைபாடு

      இ) சரியான உணவு எடுத்துக் கொள்ளாமை

      ஈ) விபத்து

5. இரத்தத்தில் சர்க்கரையின் அளவு குறைவதற்கான காரணம் என்ன?

   அ) கல்லீரல் நோய்

   ஆ) அளவுக்கு அதிகமான இரும்புச்சத்து மாத்திரைகளை எடுத்துக் கொள்ளுதல்

   இ) மூச்சுக்குழல் நோய்த்தொற்று

   ஈ) அளவுக்கு அதிகமான நீரிழிவு நோய்க்கான மருந்துகளை எடுத்துக் கொள்ளுதல்

6. கீழ்க்கண்டவற்றுள் எந்த மருந்து இரத்தத்தில் சர்க்கரையின் அளவு குறைவதற்கு காரணமாகிறது?

   அ)மெட் ஃபார்மின்
   ஆ) கிளிப்பிசைடு
   இ) மிஜிலிட்டால்
   ஈ) நியூரோபையான்

7. இரத்தத்தில் சர்க்கரையின் அளவு குறைவதால் ஆரம்பத்தில் வரும் அறிகுறி என்ன?

   அ) வியர்வை
   ஆ) காய்ச்சல்
   இ) வாந்தி
   ஈ) படபடப்பு

8. இரத்தத்தில் சர்க்கரையின் அளவு குறைவால் இரவில் வரும் அறிகுறி என்ன?

   அ) மூச்சுத்திணறல்
   ஆ) நாடித்துடிப்பு அதிகரித்தல்
   இ) பயம்
   ஈ) வியர்வையினால் படுக்கை ஈரமாதல்

9. இவற்றுள் எந்த வகையான கண்டறியும் முறை இரத்தத்தில் சர்க்கரையின் அளவு குறைவதை கண்டறிய உதவுகிறது?

   அ) சிறுநீர் பரிசோதனை
   ஆ) வரலாற்றைக் குறித்துக் கொள்ளுதல்
   இ) முழு உடல் பரிசோதனை
   ஈ) இரத்தத்தில் சர்க்கரையின் அளவு

10. சாப்பிடும் முன் பார்க்கும் இரத்தத்தின் சர்க்கரையின் சரியான அளவு என்ன?

அ) 70 முதல் 100 மி.கி/டெ.லி

ஆ) 80 முதல் 120 மி.கி/டெ.லி

இ) 80 முதல் 100 மி.கி/டெ.லி

ஈ) 100க்கும் குறைவாக இருத்தல்

11. உணவு சாப்பிட்ட பின்பு பார்க்கும் இரத்தத்தின் சர்க்கரையின் சரியான அளவு என்ன?

அ) 180க்கும் அதிகமாக இருத்தல்

ஆ) 80 முதல் 120 மி.கி/டெ.லி

இ) 140க்கும் குறைவாக இருத்தல்

ஈ) 70 முதல் 100 மி.கி/டெ.லி

12. சாதாரணமாக பார்க்கும் இரத்தத்தில் சர்க்கரையின் அளவு என்ன?

அ) 70 முதல் 130 மி.கி/டெ.லி

ஆ) 79 முதல் 140 கி.கி/டெ.லி

இ) 80 முதல் 120 மி.கி/டெ.லி

ஈ) 200க்கும் குறைவாக இருத்தல்

13. இரத்தத்தில் சர்க்கரையின் அளவு குறைவின் சிகிச்சை முறை என்ன?

அ) மருந்து உட்கொள்ளுதலின் புது அட்டவணை திட்டமிடுதல்

ஆ) அதிகப்படியான உடற்பயிற்சி மேற்கொள்ளுதல்

இ) உட்கொள்ளும் உணவின் அளவை குறைத்தல்

ஈ) நீரிழிவு நோய்க்கான மருந்துகளை அதிகமாக எடுத்துக் கொள்ளுதல்

14. இரத்தத்தில் சர்க்கரை அளவு குறைவின் மருத்துவ சிகிச்சை முறை என்ன?

அ) குளுக்கோகான்

ஆ) மெட் ஃபார்மின்

இ) மிஜிலிட்டால்

ஈ) இன்சுலின்

15. இரத்தத்தில் சர்க்கரை அளவு குறைவின் அவசர சிகிச்சை முறை என்ன?

அ) நீரிழிவு நோய்க்கான மருந்துகளை எடுத்துக் கொள்ளுதல்

ஆ) உடற்பயிற்சி செய்தல்

இ) ஒரு தேக்கரண்டி சர்க்கரை அல்லது தேன் உட்கொள்ளுதல்

ஈ) நார்ச்சத்து நிறைந்த உணவுப் பொருள்களை எடுத்துக் கொள்ளுதல்

16. இரத்தத்தில் சர்க்கரையின் அளவு 50 முதல் 70 வரை குறையும் போது மேற்கொள்ளும் சிகிச்சை முறை என்ன?

அ) எண்ணெய் நிறைந்த உணவுப் பொருள்களை எடுத்துக் கொள்ளுதல்

ஆ) 10 முதல் 15 கிராம் மாவுச்சத்து நிறைந்த உணவுப் பொருட்களை
(4 தேக்கரண்டி சர்க்கரை) எடுத்துக் கொள்ளுதல்

இ) காரமான உணவுப் பொருள்களை எடுத்துக் கொள்ளுதல்

ஈ) நார்ச்சத்து நிறைந்த உணவுப் பொருள்களை எடுத்துக் கொள்ளுதல்

17. இரத்தத்தில் சர்க்கரையின் அளவு 50க்கும் குறைவாக இருக்கும்போது மேற்கொள்ளும் சிகிச்சை முறை என்ன?

அ)நீரிழிவு நோய்க்கான மருந்துகளை எடுத்துக் கொள்ளுதல்

ஆ) 20 முதல் 30 கிராம் மாவுச்சத்து நிறைந்த உணவுப் பொருட்களை
(1 டம்ளர் ஆரஞ்சு பழச்சாறு) எடுத்துக் கொள்ளுதல்

இ) உடற்பயிற்சி செய்தல்

ஈ) வைட்டமின் மருந்துகளை எடுத்துக் கொள்ளுதல்

18. இரத்தத்தில் சர்க்கரையின் அளவு குறைவின் தடுப்பு முறை என்ன?

அ) உணவு பழக்க முறை 4 முதல் 5 மணி நேரத்திற்குள் இருக்க வேண்டும்

ஆ) நீரிழிவு நோய்க்கான மருந்துகளை அதிகமாக எடுத்துக் கொள்ளுதல்

இ) நார்ச்சத்து நிறைந்த உணவுப் பொருள்களை எடுத்துக் கொள்ளுதல்

ஈ) உடற்பயிற்சி செய்தல்

xxx

19.கீழ்க்கண்டவற்றில் எந்த வகையான உணவானது இரத்தத்தில் சர்க்கரையின் அளவு குறையாமல் இருக்க உதவுகிறது?

அ) நார்ச்சத்து நிறைந்த உணவு

ஆ) மாவுச்சத்து நிறைந்த உணவு

இ)காரவகையான உணவு

ஈ)எண்ணெய் சேர்க்கப்பட்ட உணவு

20. வாகனம் ஓட்டுவதற்கு முன்பு மேற்கொள்ள வேண்டிய தடுப்பு முறை என்ன?

அ) வாகனம் ஓட்டுவதற்கு முன்பு இரத்தத்தில் சர்க்கரையின் அளவை பார்த்தல்

ஆ) வாகனம் ஓட்டுவதற்கு முன்பு நீரிழிவு நோயின் மருந்துகளை எடுத்துக் கொள்ளுதல்

இ) வாகனம் ஓட்டுவதற்கு முன்பு நார்ச்சத்து நிறைந்த உணவுப் பொருள்களை எடுத்துக் கொள்ளுதல்

ஈ) வாகனம் ஓட்டுவதற்கு முன்பு உடற்பயிற்சி செய்தல்

21. தீவிர உடற்பயிற்சிக்கு பின்பு எவ்வளவு நேர இடைவெளியில் இரத்தத்தில் சர்க்கரையின் அளவு குறைகிறது?

அ) 24 மணி நேரத்திற்குள்

ஆ) 36 மணி நேரத்திற்குள்

இ) 48 மணி நேரத்திற்குள்

ஈ) 72 மணி நேரத்திற்குள்

22. கீழ்க்கண்ட எந்த வகையான தடுப்பு முறையை உடற்பயிற்சி செய்வதற்கு முன்பு மேற்கொள்ள வேண்டும்?

அ) நீரிழிவு நோயின் மருந்துகளை எடுத்துக் கொள்ள வேண்டும்

ஆ) கொழுப்பு நிறைந்த உணவுப் பொருட்களை எடுத்துக் கொள்ள வேண்டும்.

இ) உணவை தவிர்க்க வேண்டும்

ஈ) பிஸ்கட் மற்றும் இனிப்பு உணவுப்பொருட்களை வைத்திருக்க வேண்டும்.

23.இரத்தத்தில் சர்க்கரையின் அளவு குறையும் போது எந்த நிலையில் சிகிச்சை முறையினை கையாள வேண்டும்?

அ) வயிற்று வலி மற்றும் வாந்தி

ஆ) தலைவலி மற்றும் பதற்றம்

இ) நாடித்துடிப்பு குறைதல் மற்றும் பயம்

ஈ) குழப்பம் மற்றும் காய்ச்சல்

24. இரத்தத்தில் சர்க்கரையின் அளவு குறைதல் மீண்டும் வராமல் இருக்க மேற்கொள்ள வேண்டிய தடுப்பு முறை என்ன?

அ) நீரழிவு நோய்க்கான மருந்துகளை அதிகமாக எடுத்துக் கொள்ளுதல்

ஆ) மாவுச்சத்து நிறைந்த உணவுப் பொருள்களை தவிர்க்க வேண்டும்

இ) அடிக்கடி சுயமாக இரத்தத்தில் சர்க்கரையின் அளவை கண்டறிதல்

ஈ)நார்ச்சத்து நிறைந்த உணவுப்பொருட்களை எடுத்துக் கொள்ளுதல்

25. கீழ்க்கண்டவற்றில் எந்த வகையான பாதுகாப்பு முறையை நீரிழிவு நோய் உள்ளவர்கள் கடைபிடிக்க வேண்டும்?

அ) எப்பொழுதும் மருத்துவ அடையாள அட்டையை அணிந்து கொள்ள வேண்டும்

ஆ) மருந்துகளை உடன் வைத்திருக்க வேண்டும்

இ) நார்ச்சத்து நிறைந்த உணவுப்பொருள்களை எடுத்துக் கொள்ள வேண்டும்

ஈ) நீரிழிவு நோயின் மருந்துகளை அதிகமாக எடுத்துக் கொள்ள வேண்டும்.

26.இரத்தத்தில் சர்க்கரையின் அளவு குறையாமல் இருக்க என்ன செய்ய வேண்டும்?

அ) கோதுமை உணவுப் பொருள்களை சாப்பிட வேண்டும்.

ஆ) அடிக்கடி இரத்தத்தின் சர்க்கரையின் அளவு குறையாமல் இருக்க உணவினை   எடுத்துக் கொள்ள வேண்டும்.

இ) நீரிழிவு நோய்க்கான மருந்துகளை எடுத்துக் கொள்ள வேண்டும்

ஈ) காரமான உணவுப் பொருள்களை சாப்பிட வேண்டும்.

27. கீழ்க்கண்ட எந்த உறுப்பானது குளுக்கோஸில் இருந்து சக்தி பெறுகிறது?

    அ) கல்லீரல்

    ஆ) இதயம்

    இ) நுரையீரல்

    ஈ) மூளை

28. இரத்தத்தில் சர்க்கரையின் அளவு குறைவின் உடனடி பின்விளைவு என்ன?

    அ) சிறுநீரக செயலிழப்பு

    ஆ) பைலேநெஃப்ரைட்டிஸ்

    இ) வலிப்பு நோய்

    ஈ) நெப்ரோஃபதி

29. இரத்தத்தில் சர்க்கரையின் அளவு குறைவின் நீண்ட கால பின்விளைவு என்ன?

    அ) மலட்டுத்தன்மை

    ஆ) உயிர் இழப்பு

    இ) கல்லீரல் செயலிழப்பு

    ஈ) அதிக அளவில் தைராய்டு ஹார்மோன் சுரத்தல்

30.இரத்தத்தில் சர்க்கரையின் அளவு குறைவிற்கு அதிக அளவு சிகிச்சை எடுப்பதால் ஏற்படும் விளைவு என்ன?

    அ) நோய்த்தொற்று

    ஆ) இரத்தத்தில் சர்க்கரையின் அளவு அதிகரித்தல்

    இ) ரெட்டினோபதி

    ஈ) வலிப்பு நோய்

APPENDIX - J

INTERVENTION

A.PREPARATION OF LADIES FINGER JUICE:

Content used for ladies finger juice

Ladies finger   : 2 numbers

Water   : 250 ml

The researcher took two number of ladies fingers and removed both ends of each piece and also made a small cut in the middle and put those two ladies fingers in 250 ml of glass of water. Cover the glass with a lid and stored that preparation over the night at room temperature.

B.COST EFFECTIVENESS FOR LADIES FINGER JUICE

Cost for the ladies finger juice for 15 days

Ladies finger   16   kg   : Rs.230

Blood glucose strip (ACCU-CHEK   : Rs.6200

Active glucometer strip no is 381))

Total   =Rs.6430

Total amount=Rs.6430

☎ 2260947, Cell : 9994941077

Delivery Note

EASWARI SURGICAL

4-A, Palaniappa Street, ERODE-638009.

No. **100**   Date 18.1.16

To
M/s._____

S.No.	Product	Qty
1.	Accu chell Active 50's	950-
	Total	950-

For Easwari Surgical

A.H. CLINICAL LABORATORY.DHARAPURAM

CASH BILL

Bill No : 256 / 2016
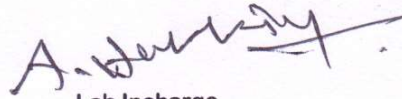
NAME : MRS. B. SHOBANA

Date : 18.02.2016

S.NO		AMOUNT
1	ACCU CHECK . - 100 STRIP	2100.00

Total Amount   2100.00

Paid Amount   2100.00

Lab Incharge

A.H CLINICAL DIAGNOSTIC CENTRE
114 CHURCH ROAD,
Near City Union Bank,
DHARAPURAM - 638 656.
CELL   94422 25416, 9789604492

A.H. CLINICAL LABORATORY.DHARAPURAM

CASH BILL

Bill No : 303 / 2016

NAME : MRS. B. SHOBANA

Date : 20.02.2016

S.NO		AMOUNT
1	ACCU CHECK - 100 STRIP	2100.00

Total Amount   2100.00

Paid Amount   2100.00

Lab Incharge

A.H CLINICAL DIAGNOSTIC CENTRE
114 CHURCH ROAD,
Near City Union Bank,
DHARAPURAM - 638 656.
CELL   94422 25416, 9789604492

A.H. CLINICAL LABORATORY.DHARAPURAM

CASH BILL

Bill No : 356 / 2016

NAME : MRS. B. SHOBANA

Date : 03.03.2016

S.NO		AMOUNT
1	ACCU CHECK - 50 STRIP	1050.00

Total Amount   1050.00

Paid Amount   1050.00

Lab Incharge

A H CLINICAL DIAGNOSTIC CENTRE
114 CHURCH ROAD,
Near City Union Bank,
DHARAPURAM - 638 656.
CELL 94422 25416, 9789604492

Bill 1

CASH / CREDIT **BILL**   Date : 27/2/16

No.

From சரவணாஸ் ஸ்டோர்
44, அன்பகம்,
சர்ச் ரோடு,
தாராபுரம் – 638656.

To.
M/s ....

Rate	PARTICULARS	Qnty.	Rs.	P.
14	வெண்டிஸ்	7	98	–

E.&O.E.   Thank You !   TOTAL

GOODS ONCE SOLD WILL NOT BE TAKEN BACK   Signature

P.S.Sankar

Bill 2

CASH / CREDIT **BILL**   Date : 19/2/16

No.

சரவணாஸ் ஸ்டோர்
44, அன்பகம்,
சர்ச் ரோடு,
தாராபுரம் – 638656.

To.
M/s ....

Rate	PARTICULARS	Qnty.	Rs.	P.
13	வெண்டிஸ்	7Kg	91	00

E.&O.E.   Thank You !   TOTAL

GOODS ONCE SOLD WILL NOT BE TAKEN BACK   Signature

P.S.Sankar

Memo

MEMO   Cell : 99425 42878
Ph : 04258 -222551

வாசன் அக்ரோ சர்வீஸ்

விதை, உரம், பூச்சிமருந்து விற்பனையகம்

245, பொள்ளாச்சி ரோடு, கனரா வங்கி எதிரில்,
தாராபுரம் – 638 656

Date 25-3-16.

வெண்டை – 4Pkt – 80

80

xl

Receipt 1 (top-left)

D. Saravanan
Cell : 99420 55397
Fax : 04258 - 227378

VIJAY XEROX

276-F, Laxmi Complex, New Bus Stand North Side, Dharapuram.

No. 380   Date 18/2/16

M/s.................

S.No.	Description	Units	Rs.	Ps.
1.	Xerox / Lamination			
2.	Colour Xerox / Spriral-Bg			
3.	Computer Print Out. ✓	15	60	
	6 side, Two side Page	15	180	
4.	Fax Outgoing - incoming			
5.	Browsing			
6.	Scaning			
	Total		240 –	

Rupees.............................
...........................only For: **Vijay Xerox**

H.O. : R.T.J. Complex, (Opp Chinthamani), DPM.

Receipt 2 (top-right)

D. Saravanan
Cell : 99420 55397
Fax : 04258 - 227378

VIJAY XEROX

276-F, Laxmi Complex, New Bus Stand North Side, Dharapuram.

No. 377   Date 22/2/16

M/s.................

S.No.	Description	Units	Rs.	Ps.
1.	Xerox / Lamination			
2.	Colour Xerox / Spriral-Bg			
3.	Computer Print Out. ✓	15	60	
	6 side, two side page	15	180	
4.	Fax Outgoing - incoming			
5.	Browsing			
6.	Scaning			
	Total		240 –	

Rupees.............................
...........................only For: **Vijay Xerox**

H.O. : R.T.J. Complex, (Opp Chinthamani), DPM.

Receipt 3 (bottom-left)

D. Saravanan
Cell : 99420 55397
Fax : 04258 - 227378

VIJAY XEROX

276-F, Laxmi Complex, New Bus Stand North Side, Dharapuram.

No. 379   Date 27/2/16

M/s.................

S.No.	Description	Units	Rs.	Ps.
1.	Xerox / Lamination			
2.	Colour Xerox / Spriral-Bg			
3.	Computer Print Out.		120	
	6 side Two side PRINT			
4.	Fax Outgoing - incoming		360	
5.	Browsing			
6.	Scaning		/	
	Total		480 –	

Rupees.............................
...........................only For: **Vijay Xerox**

H.O. : R.T.J. Complex, (Opp Chinthamani), DPM.

Receipt 4 (bottom-right)

Brought By   **CASH / CREDIT**
JAPAN FANCY   25   BILL
DHARAPURAM

No.   Sold To

Date 2?/02/16

Qty	PARTICULARS	RATE	AMOUNT Rs.	Ps.
3	CR- 2052	30	90	

Thanking you!   Total 90

Goods once sold will not be taken back or exchanged
E & O.E.

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xli

APPENDIX - K

PAMPHLET ON HYPOGLYCEMIA

INTRODUCTION:

Hypoglycemia, also called low blood glucose or low blood sugar, occurs when blood glucose drops below normal levels. Circulating glucose is the primary source of energy for the brain. If have type 2 diabetes and need medication to control blood sugar, taking more medication than need can cause blood sugar level to drop too low and result in hypoglycemia.

DEFINITION:

Hypoglycemia is defined as blood sugar below 70 milligrams per deciliter (mg/dL), or 3.9 millimoles per liter (mmol/L).

CLASSIFICATIONS OF HYPOGLYCEMIA

- Severe hypoglycemia; < 45 mg/dl
- Moderate hypoglycemia; 45-59 mg/dl
- Mild hypoglycemia; 60-70 mg/dl

CAUSES:

➢ Hypoglycemia can occur as a side effect of some diabetes medications, including insulin and glimepiride (Amaryl), glipizide (Glucotrol).

➢ In addition, use of the following injectable medications can cause hypoglycaemia such as Pramlintide (Symlin), which is used along with insulin.

➢ Eating less food than usual

- ➢ Skipping a meal or snack

- ➢ Increasing exercise or physical activity

- ➢ Drinking alcohol

- ➢ Nutritional and fluid imbalances
- ➢ Fasting
- ➢ Postponing a meal or snack

SIGNS AND SYMPTOMS:

Most people feel symptoms of hypoglycemia when their blood sugar is 70 milligrams per deciliter (mg/dL) or lower.

Early warning signs and symptoms

Early signs and symptoms of hypoglycemia include:

- • Shakiness

- • Sweating

- • Hunger

- • Anxiety or nervousness

- Headache

- Confusion

- Pounding heart; racing pulse

- Pale skin

Night time symptoms

- Damp sheets or bedclothes due to perspiration

- Tiredness, irritability or confusion upon waking

Severe symptoms

If hypoglycemia goes untreated, signs and symptoms of severe hypoglycemia can occur. These include:

- Muscle weakness

- Clumsiness or jerky movements
- Difficulty speaking or slurred speech
- Blurry or double vision

- Drowsiness
- Confusion
- Convulsions or seizures

TESTS AND DIAGNOSIS:

Can determine if having low blood sugar by using a blood glucometer — a small computerized device that measures and displays blood sugar level.

TREATMENT:

People who experience hypoglycemia several times in a week should call their health care provider. They may need a change in their treatment plan such as,

- less medication or a different medication
- a new schedule for medication,
- a different meal plan, or a new physical activity plan.

Prompt Treatment for Hypoglycemia

When people think their blood glucose is too low, they should check the blood glucose level of a blood sample using a glucometer. If the level is below 70 mg/dL, one of these quick-fix foods should be consumed right away to raise blood glucose:

- 3 or 4 glucose tablets

- 1 serving of glucose gel—the amount equal to 15 grams of carbohydrate

Treat low blood sugar: 15:15 rule

Check blood sugar

Eat 15 grams of carbohydrate

Wait 15 minutes for sugar to get into blood

ADAM

- 1/2 cup, or 4 ounces. of any fruit juice

- 1/2 cup, or 4 ounces, of a regular—**not diet**—soft drink

- 1 cup, or 8 ounces, of milk with sugar.

- 5 or 6 pieces of hard candy

- 1 cup, or 8 ounces ,of milk with sugar .
- 1 tablespoon of sugar or honey

- The next step is to recheck blood glucose in 15 minutes to make sure it is 70 mg/dl or above. If it's still too low, another serving of a quick-fix food should be eaten.

- These steps should be repeated until the blood glucose level is 70 mg/dl or above.

Physical Activity and Blood Glucose Levels

A health care provider can advise about checking the blood glucose level before exercise and adjusting medication doses before physical activity to help avoid hypoglycemia. A snack (such as biscuits ,any fruits and chocolates) can prevent hypoglycemia.

Hypoglycemia When Driving

People at risk for hypoglycemia should check their blood glucose level before driving. During longer trips, they should check their blood glucose level frequently and eat snacks as needed to keep the level at 70 mg/dl or above.

Difficult-to-manage hypoglycemia

Some people have frequent and severe hypoglycemia despite medication adjustments. In these circumstances, doctor may recommend a higher glucose goal range and prescribe glucagon, a hormone that causes blood glucose to rise.

PREVENTION:

To prevent hypoglycemia people with diabetes should always consider the following**:**

- ✓   A health care provider should explain about diabetes medications which cause hypoglycemia and explain how and when to take medications.

- ✓ People with diabetes should eat regular meals, have enough food at each meal, and try not to skip meals or snacks.

✓ Checking blood glucose before and after sports, exercise, or other physical activity and having a snack if the level is below 100 milligrams per deciliter (mg/dl) .

✓ People should never drive car with a low blood sugar. Checking the blood glucose level before driving. Always keep something such as snacks (such as biscuits, any fruits and chocolates) to treat a low blood sugar reaction in car.

✓ Hypoglycemic reactions can occur at night. So they should keep a fast acting sugar (like orange juice, chocolates ,and honey) near bedside.

✓ Drinking alcoholic beverages, especially on an empty stomach, can cause hypoglycemia, even a day or two later. The alcohol should avoid it.

✓ People are susceptible to attacks of hypoglycemia, let inform to friends, family members and collegues about what the signs and what should be done.

✓ Keep the name and phone number of doctor are accessible.

✓ Carry some form of diabetes identification(such as medic altert bracelet and wallet card) so that in an emergency others will know that people have diabetes.

COMPLICATIONS:

Recognize the signs and symptoms of hypoglycemia early because if untreated, hypoglycemia can lead to:

- Severe confusion and disorientation
- Lack of coordination
- Loss of consciousness
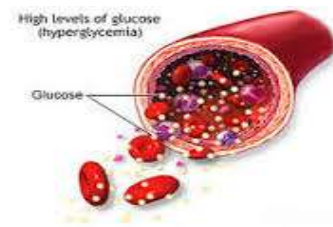
- Seizures

- Cardiac arrest

- Brain damage

- Coma

- Death

On the other hand, be careful not to over treat low blood sugar. Blood sugar level to rise too high (hyperglycemia), which can become a problem with repeated episodes of hypoglycemia.

,uj;jj;jpy; rh;f;fiuapd; mst[Fiwt[

Kd;Diu:-

,uj;jj;jpy; rh;f;fiuapd; mst[Fiwt[(iQg;nghf;isrPkpah) vd;gJ ,uj;jj;jpy; FSf;nfh!pd; mst[,ay;ghd epiyia tpl Fiwthf ,Uj;jy; MFk;. \isf;F rf;jp jUgitfspy; FSf;nfh!; Kjy;epiy tfpf;fpwJ. tif 2 ePhpHpt[nehia (,uj;jj;jpy; rh;f;fiuapd; mst[mjpfk;) fl;Lg;gLj;j kUe;Jfs; njitg;gLfpwJ. mjdhy;/ mst[f;F mjpfkhf kUe;Jfs; vLg;gjhy;/ ,uj;jj;jpy; rh;f;fiuapd; mst[FiwfpwJ.

tiuaiw :-

,uj;jj;jpy; rh;f;fiuapd; mst[Fiwt[vd;gJ ,uj;jj;jpy; rh;f;fiuapd; mst[70 kp.fp. /bl.ypf;Fk; Fiwthf ,Ug;gJ MFk;.

tiffs; :-

• kpf nkhrkhd iQg;nghf;isrPkpah $<$ 45 kp.fp/bl.yp.

• kpjkhd iQg;nghf;isrPkpah 45 – 59 kp.fp/bl.yp.

• kpf Fiwthd iQg;nghf;isrPkpah 60 – 70 kp.fp/bl.yp.

fhuz';fs; :-

❖ mst[f;F mjpfkhf ePhpHpt[nehapd; khj;jpiu vLj;Jf; bfhs;tjhy; ,uj;jj;jpy; rh;f;fiuapd; mst[FiwfpwJ.

○ (v.fh. fpspg;gpirL/ f;iskpg;iuL)

❖ njitf;F Fiwthf czt[cl;bfhs;Sjy;

❖ czt[fis jtph;j;jy;

❖ czt[rhg;gpLtij js;spg;nghLjy;

❖ mjpfkhd clw;gapw;rpfis nkw;bfhs;Sjy;

❖ kJghdk; mUe;Jjy;

❖ Cl;lr;rj;J kw;Wk; ePh;r;rj;J FiwghL

❖ tpujk; my;yJ czt[cz;zhky; ,Uj;jy;

mwpFwpfs; :-

kf;fSf;F ,uj;jj;jpy; rh;f;fiuapd; mst[70 kp.fp/bl.yp Fiwthf ,Uf;Fk; nghJ mwpFwpfs; Vw;gLfpwJ.

❖ **Kjy;epiy mwpFwpfs;**

• eLf;fk;

• tpah;it

• grp

• gak;

li

- jiytyp
- FHg;gk;

- ,ja glglg;g[/ ehoj;Jog;g[mjpfhpj;jy;

- btspwpaj; njhy;

❖ **,ut[neuj;jpy; Vw;gLk; mwpFwpfs;**

- tpah;itapdhy; gLf;if <ukhjy;

- nrhh;t[/ vhpr;ry; my;yJ FHg;gj;Jld; tpHpj;jy;

❖ **nkhrkhd mwpFwpfs;**

- jirfs; gytPdk;

- ngRtjw;F rpukk; Vw;gLjy;
- ,ul;ilg; ghh;it

- kaf;fk;
- FHg;gk;

- typg;g[

fz;lwpa[k; Kiw :-

FSf;nfh kPl;lh; ghpnrhjid \yk; ,uj;jj;jpy; rh;f;fiuapd; mst[fz;lwpag;gLfpwJ.

rpfpr;ir Kiw :-

kf;fs; ,uj;jj;jpd; rh;f;fiuapd; mst[Fiwtij mof;fo czUk; nghJ kUj;Jt gzpahsiu mqf ntz;Lk;. mth;fs; rpfpr;ir Kiwapy; khw;wj;ij Vw;gLj;jyhk;. mitfshtd.

- Fiwthd khj;jpiu my;yJ btt;ntwhd khj;jpiu
- vLj;Jf; bfhs;Sk; kUe;JfSf;F g[jpa ml;ltiz
- khw;wpaikf;fg;gl;l czt[Kiw my;yJ clw;gapw;rp

 ,uj;jj;jpy; rh;f;fiuapd; mst[Fiwa[k; nghJ nkw;bfhs;Sk; rpfpr;ir Kiwfs;

kf;fs; j';fsJ ,uj;jj;jpy; rh;f;fiuapd; mst[Fiwtij czUk; nghJ FSf;nfhkPl;liu gad;gLj;jp ,uj;jj;jpy; rh;f;fiuapd; msit ghpnrhjpf;f ntz;Lk;. ,uj;jj;jpy; rh;f;fiuapd; mst[70 kp.fp./bl.yp-f;F Fiwthf ,Uf;Fk; nghJ cldoahf njh;t[bra;ag;gl;l czt[fis vLj;Jf; bfhz;L ,uj;jj;jpy; rh;f;fiuapd; msit mjpfhpf;f ntz;Lk;. mitahtd.

> 3 my;yJ 4 FSf;nfh!; khj;jpiufs;

> ½ lk;sh; gHr;rhW

> ½ lk;sh; kpjkhd ePh; Mfhu';fs;

> 1 lk;sh; ghy; cld; rh;f;fiu

- ➤ 5 my;yJ 6 rhf;byl; Jz;Lfs;

- ➤ 1 njf;fuz;o mst[rh;f;fiu my;yJ njd;

mLj;j epiyapy; ,uj;j rh;f;fiuapd; mst[15 epkplj;jpw;Fs; kWghpnrhjid bra;J mjd; mst[70 kp.fp/bl.yp my;yJ mjw;F mjpfkhf ,Uf;fpwjh vd;W ghh;f;f ntz;Lk;. mg;go ,y;iybadpy; kWgoa[k; cldoahf njh;t[bra;ag;gl;l cztpid vLf;f ntz;Lk;.

,uj;jj;jpd; rh;f;fiuapd; mst[70 kp.fp/bl.yp-f;F mjpfkhftpy;iybadpy;/ nkw;fz;l goepiyfis jpUk;g bra;a ntz;Lk;.

🔹 **clw;gapw;rp kw;Wk; ,uj;j rh;f;fiuapd; mst[**

kUj;Jt gzpahshpd; mwpt[iug;go clw;gapw;rp bra;tjw;F Kd;g[,uj;j rh;f;fiuapd; msit fz;lwptjd; \yKk; kw;Wk; kUe;Jfspd; msit rhp bra;tjd; \yKk; ,uj;jj;jpy; rh;f;fiuapd; msit Fiwtij jLf;fyhk;.

jpz;gz;l';fshd gp!;fl;/ gH';fs; kw;Wk; ,dpg;g[fis vLj;Jf; bfhs;tjd; \yk; ,uj;jj;jpy; rh;f;fiuapd; msit Fiwtij jLf;fyhk;.

⬛ ,uj;jj;jpy; rh;f;fiuapd; mst[Fiwthf cs;sth;fs; thfdk; Xl;Ltjw;F Kd;g[nkw;bfhs;s ntz;oa jLg;g[Kiwfs;

kf;fs; thfdk; Xl;Ltjw;F Kd;g[,uj;j rh;f;fiuapd; msit ghpnrhjid bra;a ntz;Lk;. btFJ}uk; gazk; bra;a[k; nghJ mof;fo ,uj;j rh;f;fiuapd; msit ghpnrhjpf;f ntz;Lk; kw;Wk; jpz;gz;l';fis rhg;gpl;L ,uj;j rh;f;fiuapd; msit 70 kp.fp/bl.yp my;yJ mjw;F mjpfkhf itj;jppUf;f ntz;Lk;.

⬛ nkhrkhd iQg;nghf;is rPkpahtpd; guhkhpg;g[fs;

kf;fSf;F kpf nkhrkhd iQg;nghf;isrPkpah Vw;gLk; nghJ/ FSf;nfhfhd; Crp kUj;Jtuhy; ghpe;Jiuf;fg;gLfpwJ. ,jd; \yk; ,uj;j rh;f;fiuapd; mst[mjpfhpf;fpwJ.

jLg;g[Kiwfs;

kf;fs; ,uj;jj;jpy; rh;f;fiuapd; mst[Fiwahky; ,Uf;f fPH;f;fz;l jLg;g[Kiwfis nkw;bfhs;s ntz;Lk;.

1. kUj;Jt gzpahsh;fs; ve;j tifahd ePphpHpt[nehapd; kUe;Jfs; ,uj;j rh;f;fiuapd; mst[Fiwtjw;F fhuzkhfpwJ vd;Wk; kw;w kUe;Jfis rhpahd neuj;jpy; vLf;f ntz;Lk; vd;Wk; mwpt[iu Tw ntz;Lk;.

2. ePhpHpt[neha; cs;s kf;fs; rhpahd neuj;jpy; czt[rhg;gpl ntz;Lk;. xt;bthU czt[ntisa[k; nghJkhd mst[czt[vLj;Jf; bfhs;s ntz;Lk; kw;Wk; czt[my;yJ jpz;gz;l';fs; rhg;gpLtij jtph;f;f TlhJ.

3. clw;gapw;rp/tpisahl nghtjw;F Kd; kw;Wk; gpd; ,uj;j rh;f;fiuapd; msit ghpnrhjid bra;a ntz;Lk;. ,uj;j rh;f;fiuapd; mst[100 kp.yp/bl.yp. Fiwa[k; nghJ jpz;gz;l';fis vLj;Jf; bfhs;s ntz;Lk;.

4. ,uj;jj;jpy; rh;f;fiuapd; mst[Fiwthf cs;s kf;fs; thfdk; XI;l TlhJ. thfdk; XI;Ltjw;F Kd;g[,uj;j rh;f;fiuapd; msit ghpnrhjid bra;a ntz;Lk; kw;Wk; jpz;gz;l';fshd gp!;fl;/ gH';fs; kw;Wk; rhf;byl; nghd;w tiffis thfdj;jpy; vg;bghGJk; itj;jpUf;f ntz;Lk;.

5. ,ut[neuj;jpy; iQg;nghf;isrPkpah Vw;gLfpwJ. mjdhy; ntfkhf ntiy bra;a[k; kf;fs; rh;f;fiu bghUs;fshd Mu";R gHr;rhW/ rhf;byl; kw;Wk; njd; nghd;witfis gLf;iff;F mUfpy; itf;f ntz;Lk;.

6. kf;fs; rhg;gplhky; kJghdk; mUe;Jtjhy; ,uj;jj;jpy; rh;f;fiuapd; mst[xd;W my;yJ ,uz;L ehl;fspy; Fiwfpwj. mjdhy; kJghdk; vLj;Jf; bfhs;tij jtph;f;f ntz;Lk;.

7. mof;fo ,uj;jj;jpy; rh;f;fiuapd; mst[Fiwa[k; kf;fs; mjid ez;gh;fs;/ FLk;g cWg;gpdh;fs; kw;Wk; cwtpdh;fsplk; mjd; mwpFwpfisa[k; kw;Wk; vd;d bra;a ntz;Lk; vd;gij gw;wpa[k; brhy;y ntz;Lk;.

8. kUj;Jthpd; bgah; kw;Wk; bjhiyngrp vz;iz cld;

itj;jpUf;f ntz;Lk;.

9.　　ePhpHpt[nehahspfs; ePhpHpt[neha;f;fhd kUj;Jt milahs
　　　ml;ilia cld; itj;jpUf;f ntz;Lk;. Vbddpy; mtru epiyapd; nghJ ePhpHpt[neha;
　　　,Ug;gij kw;wth;fs; mwpe;J bfhs;tjw;F cjt[fpwJ.

gpd;tpist[fs; :-

- ✓ mjpfg;goahd kdf;FHg;gk;
- ✓ Raepidit ,Hj;jy;

- ✓ typg;g[neha;

- ✓ ,jaj;Jog;g[epd;W nghjy;
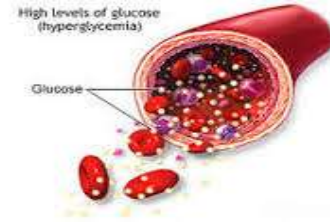

- ✓ \is ghjpg;g[

- ✓ 　nfhkh

- ✓ caph; ,Hg;g[

,uj;j rh;f;fiuapd; mst[Fiwtjd; rpfpr;ir Kiwia mst[ld; bra;jy; ntz;Lk;. ,y;iybadpy; ,uj;jj;jpy; rh;f;fiuapd; mst[mjpfhpj;JtpLk;.

Answer key

1	B	12	B	23	B
2	B	13	A	24	C
3	B	14	A	25	A
4	C	15	C	26	B
5	D	16	B	27	D
6	B	17	B	28	C
7	A	18	A	29	B
8	D	19	B	30	B
9	D	20	A		
10	A	21	A		
11	C	22	D		

APPENDIX – L

PHOTOS