

**EFFECTIVENESS OF LADY'S FINGER JUICE ON BLOOD
SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS
CLIENTS AT SAMAYANALLUR, MADURAI**

**M.Sc (NURSING) DEGREE EXAMINATION
BRANCH – IV COMMUNITY HEALTH NURSING
COLLEGE OF NURSING
MADURAI MEDICAL COLLEGE, MADURAI - 20**



A dissertation submitted to
**THE TAMILNADU Dr. M.G.R. MEDICAL UNIVERSITY,
CHENNAI – 600 032.**

In partial fulfillment of requirement for the degree of
MASTER OF SCIENCE IN NURSING

APRIL – 2014

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CERTIFICATE

This is to certify that this dissertation titled, **“EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI”** is a bonafide work done by **Mrs.SUJITHA.R**, College of Nursing, Madurai Medical College, Madurai - 20, submitted to the Tamilnadu Dr. M.G.R. Medical University, Chennai in partial fulfilment of the university rules and regulations towards the award of the degree of Master of Science in Nursing, Branch IV, Community health Nursing under our guidance and supervision during the academic period from 2012 – 2014.

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CLIENTS AT SAMAYANALLUR, MADURAI**

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ABSTRACT

This study was to assess the effectiveness of lady's finger juice on blood sugar level among type 2 diabetes mellitus clients at Samayanallur, Madurai. Type 2 diabetes mellitus is defined as a heterogeneous disorder involving both genetic and environmental factors. Modified Widenbach's prescriptive theory and Quantitative approach with Quasi experimental Non equivalent control group pre test post test design was adopted for this study. With the use of non probability purposive sampling technique, 30 clients were assigned to experimental group, and 30 were in control group (n=60). After getting informed consent, baseline data was collected using structured interview questionnaire. Pretest fasting and post prandial blood sugar was assessed using glucometer for both the groups. Lady's finger juice 150 ml was given to the experimental group daily in empty stomach for 30 days. On day 31, post test fasting and post prandial blood sugar levels were assessed. Result revealed that the pre test mean (fasting 148.2 and postprandial 197.73) was higher than post test mean (fasting 116.8 and postprandial 146.67). The obtained t value was 10.26 for fasting blood sugar and 14.4 for post prandial blood sugar level, at $P < 0.05$ level of significance. There was a significant association between blood sugar levels among experimental group and certain demographic and clinical variables. The study concludes that experimental group had reduction in the blood sugar level than control group. Hence, the lady's finger juice had effect on blood sugar level among type 2 diabetes mellitus clients.

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CHAPTER I

INTRODUCTION

“Let food be your medicine, and medicine your food.”

-Hippocrates

All cells in the body need energy to work normally. Glucose is the main source of energy for the body's cells and is carried to each cell through the bloodstream. The hormone insulin allows the glucose to get into the cells. Diabetes is caused by a problem in the way the body makes or uses insulin. Insulin is needed to move blood sugar (glucose) into cells, where it is stored and later used for energy. Diabetes mellitus is currently becoming a common Non-communicable diseases problem, which includes a range of chronic conditions, including cancer, diabetes, cardiovascular disease, hypertension, as well as Alzheimer's and other dementias.

There are two major forms of diabetes, type 1 (previously called insulin-dependent diabetes mellitus, or juvenile-onset diabetes) and type 2 (previously called noninsulin-dependent diabetes mellitus, or maturity-onset diabetes).

Diabetes mellitus type 2 (formerly noninsulin-dependent diabetes mellitus or adult-onset diabetes) is a metabolic disorder that is characterized by high blood glucose in the context of insulin resistance and relative insulin deficiency. This is in contrast to diabetes mellitus type 1, in which there is an absolute insulin deficiency due to destruction of islet cells in the pancreas. The classic symptoms are excess thirst, frequent urination, and constant hunger. Type 2 diabetes makes up about 90% of cases of diabetes with the other 10% primarily due to diabetes mellitus type 1 and gestational diabetes.

Over time, the pancreas becomes unable to produce enough insulin to overcome resistance. In type 2 diabetes, the initial effect of this stage is usually an abnormal rise in blood sugar after a meal (called *postprandial hyperglycemia*). Eventually, the cycle of elevated glucose further damages beta cells, thereby drastically reducing insulin production and causing full-blown diabetes. This is made evident by *fasting hyperglycemia*, in which glucose levels are high most of the time.

Type 2 diabetes is typically a chronic disease associated with a ten-year-shorter life expectancy. This is partly due to a number of complications with which it is associated, including: two to four times the risk of cardiovascular disease, including ischemic heart disease and stroke; a 20-fold increase in lower limb amputations, and increased rates of hospitalizations. In the developed world, and increasingly elsewhere, type 2 diabetes is the largest cause of non traumatic blindness and kidney failure. It has also been associated with an increased risk of cognitive dysfunction and dementia through disease processes such as Alzheimer's disease and vascular dementia.

Long-term complications from high blood sugar can include heart disease, strokes, diabetic retinopathy where eyesight is affected, kidney failure which may require dialysis, and poor circulation in the limbs leading to amputations. The acute complication of ketoacidosis, a feature of type 1 diabetes, is uncommon. However, non ketotic hyperosmolar coma may occur.

Type 2 Diabetes Mellitus is a chronic condition which is largely preventable and manageable but difficult to cure. Management concentrates on keeping blood sugar levels as close to normal ("euglycemia") as possible without presenting undue patient danger. This can usually be with close dietary management, exercise, and use

of appropriate medications (insulin only in the case of type 1 diabetes mellitus. Oral medications may be used in the case of type 2 diabetes, as well as insulin).

Lifestyle changes of diet and exercise are extremely important for people who have diabetes, or who are at high risk of developing complications due to type 2 diabetes. Lifestyle interventions can be very effective in preventing or postponing the progression of diabetes. These interventions are especially important for overweight people. Obesity is common in patients with type 2 diabetes, and this condition appears to be related to insulin resistance. The primary dietary goal for overweight type 2 patients is weight loss and maintenance. Aerobic exercise leads to a decrease in glycosylated hemoglobin and improved insulin sensitivity. Resistance training is also useful and the combination of both types of exercise may be most effective.

The pre stage of type 2 diabetes mellitus can be identified by an impaired glucose tolerance and/or by an impaired fasting blood sugar. To effectively manage glycosylated hemoglobin and blood sugar levels, it is important to understand how to balance food intake, physical activity, and medication. With regular exercise and diet modification programs, many people with type 2 diabetes can minimize or even avoid medications.

Apart from weight loss and increase in physical activity, the development of type 2 diabetes mellitus can also be prevented by dietary changes. A low-fat diet with a dietary fibre intake of more than 30g/d was shown to represent an effective preventive approach. A high-fibre diet has many positive effects on the physical health status. In addition to positive effects in the gastrointestinal tract it has an obvious potential to support weight reduction and to improve disturbances of carbohydrate and fat metabolism.

At the present state of knowledge, insoluble dietary fibres as found in whole grain cereal products are considered to be especially effective in the prevention of type 2 diabetes mellitus. A high intake of fruits and vegetables as well as pulses also exerts health-promoting properties. A diabetic diet that promotes weight loss is important. A low glycemic index diet has been found to improve blood sugar control.

The American Diabetes Association recommends that people with type 2 diabetes eat high-fibre (14g fibre for every 1,000 calories) and whole-grain foods. High intake of fibre, especially from whole grain cereals and breads, can help to regulate the blood sugar. Good nutrition and regular exercise can help prevent or manage medical complications of diabetes (such as heart disease and stroke) and help patients live longer and healthier lives.

1.1 NEED FOR THE STUDY

Diabetes is the fourth-leading cause of death in most developed countries and typically reduces life expectancy by 8-10 years. Cardiovascular disease is the major cause of death in people with Type 2 diabetes with a four- to five-fold increase in macro vascular disease. Diabetes also leads to long-term tissue damage and is a major cause of blindness, renal failure and amputation, all of which have an enormous impact on health and quality of life. The burden of diabetes is to a large extent the consequence of macro vascular (coronary artery disease, peripheral vascular disease, and atherosclerosis) and micro vascular (like retinopathy, neuropathy, and nephropathy) complications of the disease (Permutt et al, 2005) . Effective treatment can prevent some of these complications but cannot eliminate them entirely.

Type 2 diabetes is a global public health crisis that threatens the economies of all nations, particularly developing countries. Fueled by rapid urbanization, nutrition

transition, and increasingly sedentary lifestyles, the epidemic has grown in parallel with the worldwide rise in obesity. It has been estimated that the global burden of type 2 diabetes mellitus for 2010 would be 248 million people (2010) which is projected to increase to 483 million in 2030 (World health organization) ; a 65 % increase (Snehalatha and Ramachandaran 2009).

According to World Health organization, 366 million people (2010) have type 2 diabetes mellitus, which is projected to increase to 552 million in 2030. The number of people with type 2 diabetes is increasing in every country . About 80% of people with diabetes live in low- and middle-income countries. The greatest number of people with diabetes is between 40 to 59 years of age. About 183 million people (50%) with diabetes are undiagnosed. Diabetes caused 4.6 million deaths in 2011. Diabetes caused at least 465 billion dollars in healthcare expenditures in 2011; about 11% of total healthcare expenditures in adults (20-79 years).

According to the International Diabetes Federation, diabetes affects at least 285 million people worldwide, and that number is expected to reach 438 million by the year 2030, with two-thirds of all diabetes cases occurring in low- to middle-income countries. The number of adults with impaired glucose tolerance will rise from 344 million in 2010 to an estimated 472 million by 2030.

Globally, it was estimated that diabetes accounted for 12% of health expenditures in 2010, or at least 376 billion—a figure expected to hit 490 billion in 2030. Its increasing prevalence and associated health complications threaten to reverse economic gains in developing countries. With limited infrastructures for diabetes care, many countries are ill-equipped to manage this epidemic.

Asia accounts for 60% of the world's diabetic population. In recent decades, Asia has undergone rapid economic development, urbanization, and transitions in nutritional status. These have led to an explosive increase in diabetes prevalence within a relatively short time. In 1980, less than 1% of Chinese adults had the disease. By 2008, the prevalence had reached nearly 10%. It was estimated that more than 92 million Chinese adults had diabetes, and another 148 million were prediabetic. These numbers suggest that China has overtaken India as the global epicentre of the diabetes epidemic. Asia's large population and rapid economic development have made it an epicentre of the epidemic. Asian populations tend to develop diabetes at younger ages and lower Body mass index levels than Caucasians.

Similarly, for India this increase is estimated to be 58%, from 51 million people in 2010 to 87 million in 2030 (Snehalatha and Ramachandaran 2009). The impacts of Type 2 Diabetes mellitus are considerable: as a lifelong disease, it increases morbidity and mortality and decreases the quality of life (Hoskote and Joshi 2008). At the same time, the disease and its complications cause a heavy economic burden for diabetic patients themselves, their families and society.

However, in urban areas of south India, the prevalence of diabetes has reached nearly 20%. In the urban population, an Indian Council of Medical Research study in 1972 reported a prevalence of 2.3% (Ahuja 1979) which rose to 12.1% in the year 2000 (Ramachandaran et al. 2001). More recently, Mohan et al. (2008) provided estimates from a nationwide surveillance study of Type 2 Diabetes mellitus and found that in urban areas there was a prevalence 7.3% of known Type 2 Diabetes and a prevalence of 3.2% in peri-urban/slum areas (urban fringes). In rural India, an early study in 1991 of rural areas in Delhi indicated that the prevalence rate for Type 2 diabetes mellitus ranged from 0.4-1.5% (Ahuja et al. 1991) .

Epidemiological studies and randomized clinical trials show that type 2 diabetes is largely preventable through diet and lifestyle modifications. Translating these findings into practice, however, requires fundamental changes in public policies, the food and built environments, and health systems. To curb the escalating diabetes epidemic, primary prevention through promotion of a healthy diet and lifestyle should be a global public policy priority.

The various healing approaches and therapies that are not based on conventional western medicine but are used along with conventional medicine to cure the disease are being broadly branded under the name of complementary medicine. Complementary therapies can; boost the immune system, help eliminate toxins, help relieve pain, improve circulation, improve sleep patterns, increase energy levels, induce deep relaxation, reduce stress and tension, restore balance to body systems. 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.

Dietary fibre is defined as the complex carbohydrates from plants that humans lack the enzymes to digest. Fibre is divided into two categories: soluble and insoluble. Whereas insoluble fibre passes through the digestive tract relatively unchanged, soluble fibre dissolves to form a soft gel. Soluble fibre may help control blood sugar by delaying gastric (stomach) emptying, retarding the entry of glucose into the bloodstream and lessening the postprandial (post-meal) rise in blood sugar. It may lessen insulin requirements in those with type 1 diabetes. Because fibre slows the digestion of foods, it can help blunt the sudden spikes in blood glucose that may occur after a low-fibre meal. Such blood sugar peaks stimulate the pancreas to pump out

more insulin. The cholesterol-lowering effect of soluble fibres may also help those with diabetes by reducing heart disease risks.

Lady's finger is one of the good herbal remedy for diabetics. Okra which are also called bhindi, lady's finger, vendai or gumbo. Okra's scientific name is *Abelmoschus esculentus*; it is occasionally referred to as *Hibiscus esculentus*. The mucilage and superior fibres found in lady's finger is believed to stabilize blood sugar as it curbs the rate at which sugar is absorbed from the intestinal tract. Okra is replete with a superior form of fibre that controls the rate of sugar absorption in the intestine and so is able to stabilize blood sugar levels. As many people in the community have diabetes mellitus, and since lady's finger is easily available, cheaper, commonly used and easily grown, the researcher selected this topic for study.

1.2 STATEMENT OF THE PROBLEM:

A study to assess the effectiveness of lady's finger juice on blood sugar level among type 2 diabetes mellitus clients at Samayanallur, Madurai.

1.3 OBJECTIVES OF THE STUDY:

- To assess the blood sugar level among type 2 diabetes mellitus clients in the experimental and control group.
- To evaluate the effectiveness of lady's finger juice on blood sugar level among type 2 diabetes mellitus clients in the experimental group.
- To determine the association of post test blood sugar levels with their selected demographic and clinical variables in the experimental group.

1.4 HYPOTHESES

H₁: There will be significant difference between the blood sugar level before and after the intake of lady's finger juice in the experimental group.

H₂: There will be significant association of post test blood sugar levels with selected demographic and clinical variables in the experimental group.

1.5 OPERATIONAL DEFINITIONS

Effectiveness: In this study, effectiveness refers to determining the extent to which lady's finger juice intake has achieved the desired effect by significantly reducing the blood sugar level among type 2 diabetes mellitus clients.

Lady's finger juice: In this study it refers to consuming lady's finger juice by type 2 diabetes mellitus clients in the early morning before breakfast for 30 days.

Lady's finger is a member of the family Malvaceae; it is extensively used globally as a vegetable for its nutritional and health benefits. In this study lady's finger juice was prepared by one medium sized lady's finger (approximately 10 cm) slit into 2 halves vertically and soaked in 150 ml of water overnight. The investigator provided the lady's finger juice (after discarding the lady's finger) to the clients the next morning 30 minutes before breakfast for 30 days.

Blood Sugar Level: In this study, it refers to the amount of glucose in the blood among type 2 diabetes mellitus clients measured using an instrument glucometer.

Type 2 diabetes mellitus clients: In this study, Type 2 diabetes mellitus clients refers to the clients who have been already diagnosed as type-2 diabetes mellitus on treatment and aged 40-60 years having increased blood glucose level , i. e., fasting

blood sugar greater than 126 mg/dl and post prandial blood sugar more than 140mg/dl at Samayanallur, Madurai..

1.6 ASSUMPTION

The study assumes that all the clients in the experimental group consume lady's finger juice daily for 30 days.

1.7 DELIMITATION

- The study is limited to the type 2 Diabetes mellitus clients on treatment at Samayanallur.
- Data collection period is limited to one month.

1.8 PROJECTED OUTCOME

This study is aimed to control blood sugar among type 2 Diabetes mellitus clients after the consumption of lady's finger juice.

CHAPTER - II

REVIEW OF LITERATURE

A literature review is a body of text that aims to review the critical points of knowledge on a particular topic of research. (American Nurses Association, 2000). The literature review is used in two ways by the research community. A literature review uses as its database reports of primary or original scholarship and does not report new primary scholarship itself. The primary reports used in the literature may be verbal, but in the vast majority of cases, reports are written documents. Second a literature review seeks to describe, summarize, evaluate, clarify and or integrate the content of primary reports.

In this study the review of literature was done from text books, published journals, articles and electronic sources. The useful and relevant literature for the present study have been organized and presented under the following sub headings.

This chapter deals with two parts:

Section A: Review of literature

Section B: Modified Conceptual framework on Widenbach's helping Art theory

SECTION - A

The literature has been organized under following sections:

- 2.1 Literature Related To Incidence And Prevalence Of Type 2 Diabetes Mellitus
- 2.2 Literature Related To Management Of Type 2 Diabetes Mellitus
- 2.3 Literature Related To Dietary Management Of Type 2 Diabetes Mellitus
- 2.4 Literature Related To Effectiveness Of Lady's Finger Juice On Type 2 Diabetes Mellitus

2.1 LITERATURE RELATED TO INCIDENCE AND PREVALENCE OF TYPE 2 DIABETES MELLITUS:

World Health Organization. (2013) has given the incidence and prevalence of type 2 Diabetes mellitus. According to the report, 366 million people (2012) have type 2 diabetes mellitus, which is projected to increase to 552 million in 2030. The number of people with type 2 diabetes is increasing in every country. About 80% of people with diabetes live in low- and middle-income countries. The greatest number of people with diabetes is between 40 to 59 years of age. About 183 million people (50%) with diabetes are undiagnosed. Diabetes caused 4.6 million deaths in 2011 and at least 465 billion dollars in healthcare expenditures in 2011; about 11% of total healthcare expenditures in adults (20-79 years).

Sarah Wild., Gojka Roglic., Anders Green., Richard Sicree., and Hilary King. (2012) conducted a study on Global Prevalence of Diabetes to estimate the prevalence of diabetes and the number of people of all ages with diabetes for years 2000 and 2030. Data on diabetes prevalence by age and sex from a limited number of countries were extrapolated to all 191 World Health Organization member states and applied to United Nations' population estimates for 2000 and 2030. The study showed that the prevalence of diabetes for all age-groups worldwide was estimated to be 2.8% in 2000 and 4.4% in 2030. The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. The prevalence of diabetes is higher in men than women, but there are more women with diabetes than men. The urban population in developing countries is projected to double between 2000 and 2030.

International Diabetes Federation. (2011) has given a report that type 2 diabetes affects at least 285 million people worldwide, and that number is expected to reach 438 million by the year 2030, with two-thirds of all diabetes cases occurring in low- to middle-income countries. The number of adults with impaired glucose tolerance will rise from 344 million in 2010 to an estimated 472 million by 2030.

National Urban Diabetes Survey. (2011) a population based study was conducted in six metropolitan cities across India and recruited 11,216 subjects aged 20 yr and above representative of all socio-economic strata. An oral glucose tolerance test was done using capillary glucose and diabetes was defined using the World health organization criteria. The study reported that the age standardized prevalence of type2 diabetes was 12.1 per cent. This study also revealed that the prevalence in the southern part of India to be higher-13.5 per cent in Chennai, 12.4 per cent, in Bangalore, and 16.6 per cent Hyderabad; compared to eastern India (Kolkata), 11.7 per cent; northern India (New Delhi), 11.6 per cent; and western India(Mumbai), 9.3 per cent.

Michele Muggeo. et al., (2010) conducted a study on Population-Based Incidence Rates and Risk Factors for Type 2 Diabetes. They investigated the white individuals who were aged 40–79 years and from the population of Bruneck, Italy. Population-standardized incidence rate of 7.6 per 1,000 person-years. Sex- and age-adjusted incidence rates were elevated 11-fold in individuals with impaired fasting glucose at baseline, 4-fold in those with impaired glucose tolerance, 3-fold in overweight individuals, 10-fold in obese individuals, and ~2-fold in individuals with dyslipidemia or hypertension. We conclude that ~1% of European white individuals aged 40–79 years develop type 2 diabetes annually.

Varghese. et al., (2010) conducted a cross-sectional community-based survey to estimate the prevalence and study the socio-demographic correlates of type 2 diabetes among adults aged 30 years and above. The study was carried out on 1,239 respondents, using a two-stage, stratified, random sampling technique. Data was collected by a personal, face-to-face interview followed by blood sugar estimation using a glucometer. The study showed that the overall prevalence of diabetes was 16%. Self-reported diabetes was 11.2%, while 4.8% of previously normal people were found to have 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).

World Health Organization., and Indian Council of medical Research. (2009) conducted National Non Communicable Disease risk factor surveillance in order to obtain continuous surveillance of Non Communicable Disease risk factors in India, the World Health Organization and Indian Council of medical Research took up Non Communicable Disease Risk Factor Surveillance in five States of India, representing different geographical locations (north, south, east and west/central India). About 40,000 individuals aged 15 to 64 yr with equal representation from urban, peri-urban (slum) and rural areas were recruited for the study. The overall frequency of self reported diabetes study was 4.5 per cent. Urban area had the highest prevalence (7.3%), followed by peri-urban/slum (3.2%) and rural areas (3.1%).

Patel, k. et al., (2009) conducted an observational study to describe the profile of subjects with type II diabetes mellitus in Gujarat, India. In that study 622 type 2 diabetic subjects of newly-diagnosed was performed. 62% (384) of the subjects were male. The majority (68%) of the Type II Diabetes Mellitus subjects was obese, and 67% had a positive family history of diabetes. Renal dysfunctions and vision impairment were, respectively, found in 10% and 9% subjects. The results revealed that many factors, such as obesity, family history of diabetes, dyslipidaemia, uncontrolled glycemic status, sedentary lifestyles, and hypertension were prevalent among the Type II Diabetes Mellitus subjects. This study concludes that the characterization of this risk profile will contribute to designing more effective and specific strategies for screening and controlling Type II Diabetes mellitus in Gujarat, India.

Mohan, V., Sandeep, S., Deepa, R ., Shah, B., and Varghese, C. (2008) conducted a recent follow up of the original cohort which showed that the overall mortality rates were nearly three-fold higher (18.9 per 1000 person-years) in people with diabetes compared to non diabetic subjects (5.3 per 1000 person-years, $P=0.004$)³⁶. The hazard ratio (HR) for all cause mortality for diabetes was found to be 3.6 compared to non diabetic subjects. The study also showed that mortality due to cardiovascular (diabetic subjects: 52.9% vs. non diabetic subjects 24.2%, $P=0.042$) and renal (diabetic subjects 23.5% vs. non diabetic subjects 6.1%, $P=0.072$) causes was higher among diabetic subjects.

Rury Holman. et al., (2008) conducted a study on Association of glycaemia with macro vascular and micro vascular complications of type 2 diabetes a prospective observational study to determine the relation between exposure to

glycaemia over time and the risk of macro vascular or micro vascular complications in patients with type 2 diabetes. 4585 white, Asian Indian, and Afro-Caribbean patients from 23 hospital based clinics in England, Scotland, and Northern Ireland. The study showed that the incidence of clinical complications was significantly associated with glycaemia. Each 1% reduction in updated mean HbA_{1c} was associated with reductions in risk of 21% for any end point related to diabetes (95% confidence interval 17% to 24%, P<0.0001), 21% for deaths related to diabetes (15% to 27%, P<0.0001), 14% for myocardial infarction (8% to 21%, P<0.0001), and 37% for micro vascular complications (33% to 41%, P<0.0001).

2.2 LITERATURE RELATED TO MANAGEMENT OF TYPE 2 DIABETES MELLITUS:

Ulrich Schwedes., Markus Siebolds., and Gabriele Mertes. (2011) conducted a study on Meal-Related Structured Self-Monitoring of Blood Glucose-Effect on diabetes control in non-insulin-treated type 2 diabetic patients. Subjects were randomized to two groups: one group used a blood glucose-monitoring device, kept blood glucose/eating diary, and received standardized counselling; the control group received non standardized counselling on diet and lifestyle. The study showed that the use of a self-monitoring blood glucose device significantly reduced HbA_{1c} levels by $1.0 \pm 1.08\%$ compared with $0.54 \pm 1.41\%$ for the control group (P = 0.0086); Treatment satisfaction increased in both groups to a similar extent (P = 0.9). The study concluded that Meal-related self-monitoring of blood glucose within a structured counselling program improved glycemic control in the majority of non-insulin-treated type 2 diabetic patients in this study.

Robert, C. Turner., Carole, A. Cull., Valeria Frighi., and Rury, R. Holman. (2010) conducted a study on Glycemic Control with Diet, Sulfonylurea, Metformin, or Insulin in Patients with Type 2 Diabetes Mellitus Progressive Requirement for Multiple Therapies to assess how often each therapy can achieve the glycemic control target levels at Outpatient diabetes clinics in 15 UK hospitals. A total of 4075 patients newly diagnosed as having type 2 diabetes ranged in age between 25 and 65 years and had a median (interquartile range) Fasting blood sugar concentration of 11.5 (9.0-14.4) mmol/L [207 (162-259) mg/dl], HbA_{1c} levels of 9.1% (7.5%-10.7%), and a mean (SD) body mass index of 29 (6) kg/m². After 3 months on a low-fat, high-carbohydrate, high-fibre diet, patients were randomized to therapy with diet alone, insulin, sulfonylurea, or metformin. The study showed that After 9 years of monotherapy with diet, insulin, or sulfonylurea, 8%, 42%, and 24%, respectively, achieved FPG levels of less than 7.8 mmol/L (140 mg/dl) and 9%, 28%, and 24% achieved HbA_{1c} levels below 7%.

Floris, A. van de Laar., Peter, L. Lucassen., Reinier, P. Akkermans., Eloy, H. van de Lisdonk., Guy, E. Rutten., and Chris van Weel. (2010) conducted a study on α -Glucosidase Inhibitors for Patients with Type 2 Diabetes at European Hallis hospital to review the effects of monotherapy with α -glucosidase inhibitors for patients with type 2 diabetes. Inclusion criteria were randomized controlled trials of at least 12 weeks' duration, α -glucosidase inhibitors monotherapy compared with any intervention, and one of the following outcome measures: mortality, morbidity, GHb, blood glucose, lipids, insulin levels, body weight, or side effects. Compared with placebo, α -glucosidase inhibitors had a beneficial effect on Glycosylated hemoglobin (acarbose -0.77%; miglitol -0.68%), fasting and post load blood glucose and post load insulin. Acarbose decreased the BMI by 0.17 kg/m² (95% CI 0.08-0.26).

Clare, L. Gillies. et al., (2009) conducted a systematic review and meta-analysis to quantify the effectiveness of pharmacological and lifestyle interventions to prevent or delay type 2 diabetes in people with impaired glucose tolerance. At Moreno, 8084 participants with impaired glucose tolerance, reported results in enough detail for inclusion in the meta-analyses. From the meta-analyses the pooled hazard ratios were 0.51 (95% confidence interval 0.44 to 0.60) for lifestyle interventions v standard advice, 0.70 (0.62 to 0.79) for oral diabetes drugs v control, 0.44 (0.28 to 0.69) for orlistat v control, and 0.32 (0.03 to 3.07) for the herbal remedy v standard diabetes advice. The study concluded that Lifestyle and pharmacological interventions reduce the rate of progression to type 2 diabetes in people with impaired glucose tolerance.

Susan, L. Norris., Joseph Lau., Jay, S. Smith., Christopher, H. Schmid., and Michael, M. Engelgau.(2008) conducted a study on Self-Management Education for Adults With Type 2 Diabetes -A meta-analysis of the effect on glycemic control to evaluate the efficacy of self-management education on GHb in adults with type 2 diabetes. A total of 31 studies of 463 initially identified articles met selection criteria. They examined the effect of baseline GHb, follow-up interval, and intervention characteristics on GHb. On average, the intervention decreased GHb by 0.76% (95% CI 0.34–1.18) more than the control group at immediate follow-up; by 0.26% (0.21% increase - 0.73% decrease) at 1–3 months of follow-up; and by 0.26% (0.05–0.48) at ≥ 4 months of follow-up. The study concluded that Self-management education improves GHb levels at immediate follow-up, and increased contact time increases the effect.

2.3 LITERATURE RELATED TO DIETARY MANAGEMENT OF TYPE 2 DIABETES MELLITUS:

Jennie Brand-Miller., Susan Hayne., Peter Petocz., and Stephen Colagiuri. (2012) conducted a study on Low-Glycemic Index Diets in the Management of Diabetes –A meta-analysis of randomized controlled trials to determine whether low-Glycemic index diets, compared with conventional or high-Glycemic index diets, improved overall glycemic control in individuals with diabetes, as assessed by reduced HbA_{1c} or fructosamine levels. 356 subjects, that met strict inclusion criteria were randomized and crossover or parallel experimental design was done for 12 days' to 12 months' duration (mean 10 weeks) with modification of at least two meals per day. The study showed that Low-Glycemic diets reduced HbA_{1c} by 0.43% points (CI 0.72–0.13) over and above that produced by high-Glycemic diets. The study concluded that choosing low-Glycemic index foods in place of conventional or high-Glycemic index foods has a small but clinically useful effect on medium-term glycemic control in patients with diabetes.

Matthias, B. Schulze., Simin Liu., Eric, B. Rimm., JoAnn, E. Manson., Walter, C. Willett., and Frank, B. Hu. (2010) conducted a study on Glycemic index, glycemic load, and dietary fibre intake and incidence of type 2 diabetes in younger and middle-aged women to prospectively examine the association between glycemic index, glycemic load, and dietary fibre and type 2 diabetes in a large cohort of young women. They identified 741 incident cases of confirmed type 2 diabetes during 8 y (716 300 person-years) of follow-up. Glycemic index was significantly associated with an increased risk of diabetes (multivariate relative risks for quintiles 1–5, respectively: 1, 1.15, 1.07, 1.27, and 1.59; 95% CI: 1.21, 2.10; *P* for trend =

0.001). Conversely, cereal fibre intake was associated with a decreased risk of diabetes (multivariate relative risks for quintiles 1–5, respectively: 1, 0.85, 0.87, 0.82, and 0.64; 95% CI: 0.48, 0.86; *P* for trend = 0.004). The study concluded that a diet high in rapidly absorbed carbohydrates and low in cereal fibre is associated with poor management of type 2 diabetes.

Manisha Chandalia., Abhimanyu Garg., Lutjohann., Klaus von Bergmann., Scott, M. Grundy., and Linda, J. Brinkley.(2009) conducted a study on Beneficial Effects of High Dietary Fibre Intake in Patients with Type 2 Diabetes Mellitus. In a randomized, crossover study, we assigned 13 patients with type 2 diabetes mellitus to follow two diets, each for six weeks: a diet containing moderate amounts of fibre (total, 24 g; 8 g of soluble fibre and 16 g of insoluble fibre), as recommended by the American Diabetes Association, and a high-fibre diet (total, 50 g; 25 g of soluble fibre and 25 g of insoluble fibre) containing foods not fortified with fibre (unfortified foods). The mean daily pre-prandial plasma glucose concentrations were 13 mg per decilitre (0.7 mmol per litre) lower (95 percent confidence interval, 1 to 24 mg per decilitre [0.1 to 1.3 mmol per litre]; *P*=0.04) and mean daily urinary glucose excretion was 1.3 g lower (median difference, 0.23 g; 95 percent confidence interval, 0.03 to 1.83; *P*=0.008). The study concluded that a high intake of dietary fibre, particularly of the soluble type, improves glycemic control, decreases hyperinsulinemia, and lowers plasma lipid concentrations in patients with type 2 diabetes.

Kopelman, P. et al., (2007) conducted a study on Dietary Intervention for treatment of type 2 diabetes mellitus in adults to assess the effect of type and frequency of different types of dietary advice to all adults with type 2 diabetes on weight, measures of diabetic control, morbidity, total mortality and quality of life. a

total of eighteen trials following 1467 participants were included. In this study, dietary approaches assessed in this review were low-fat/high-carbohydrate diets, high-fat/low-carbohydrate diets, low-calorie (1000 kcal per day) and very-low-calorie (500 kcal per day) diets and modified fat diets. The results suggest that adoption of regular exercise is a good way to promote better glycaemic control in type 2 diabetic patients.

Kavouras.et al., (2007) conducted a correlation study to evaluate the relationship between physical activity, obesity status, with glycemic control and insulin resistance in Greece among 1514 men and 1528 women without evidence of cardiovascular or other chronic disease. The participants were classified as inactive, minimally active or health enhancing physical activity based on the International Physical Activity Questionnaire. Insulin sensitivity was assessed by the homeostatic model and overweight or obesity was assessed according to Body Mass Index (BMI \geq 25). The conclusion of the study was the physical activity had a significant effect on insulin sensitivity.

2.4 LITERATURE RELATED TO EFFECTIVENESS OF LADY'S FINGER JUICE ON TYPE 2 DIABETES MELLITUS:

Ravindra, J. et al., (2011) conducted an experimental study on Ant diabetic activity of abelmoschus esculentus fruit extract to identify the anti diabetic activity of abelmoschus esculentus (ladies finger) fruit extract at Gujarat Haboolia diabetic centre. The fruits of Abelmoschus Esculentus were chopped and soaked in water for 6 hrs and squeezed so that the mucilage enters the water this extract is further used to observe its anti diabetic activity by consuming the extract in empty stomach for three weeks. The pretest-posttest difference in fasting glucose levels were 46mg/dl(pre-test

mean 168mg/dl and post test mean was 122mg/dl) and post prandial glucose levels were 53mg/dl (pre-test mean 191mg/dl and post test mean was 138mg/dl) respectively. The study showed that lady's finger juice has control on blood glucose levels among type 2 Diabetes mellitus clients.

Bhadia Sharma. (2011) conducted a quasi experimental study to evaluate the effect of okra juice on type II diabetes mellitus at selected villages of Iraq. Twenty five clients with type 2 diabetes mellitus (fasting glucose >120 mg/dl) were divided into two groups. Group 1 (n=12) received the okra juice 200 ml/day and the group 2 (n=13) received routine diet. Medications and dietary control was maintained for both the groups. At the end of one month fasting and post prandial glucose was assessed and compared with pre-test values ($p < 0.001$) The group 1 has significantly lower mean fasting and postprandial level than group 2. ($p < 0.001$) The results showed that there is a significant reduction in mean fasting and postprandial levels. The study concludes that there is effect of okra extract on blood sugar among type 2 Diabetes mellitus.

Tannon, J.Kalison. (2011) conducted a pre experimental study on Effect of soluble pectin of *Abelmoscus esculentus* on Type 2 Diabetes mellitus to assess the effect of soluble pectin on type 2 Diabetes mellitus. Eighty clients (48 males and 32 females) who have diabetes less than 5 years on treatment at tibetian rural hospital were selected. Dietary control and medication regulations were followed. The pre test fasting glucose levels were recorded. One Okra was slit vertically and soaked overnight so that the mucilage which contains soluble pectin gets dissolved in water about 150 ml and clients were asked to consume every morning in empty stomach continuously for 45 days. The results showed that there is decrease in the post test fasting glucose level.

Alegbejo, J.O. (2011) conducted an experimental study on Effect of *Abelmoschus esculentus* L juice in control of blood sugar among type 2 Diabetes mellitus clients. 40 samples aged 40-60 years in selected areas of Vietnam were selected through purposive sampling method with inclusion criteria. An *Abelmoschus esculentus* L was soaked overnight and the water (150 ml) was given to the clients every day morning in empty stomach for 30 days .The pre and post test mean blood sugar levels were compared. The study showed that there is significant difference between the pre test (mean fasting level=174.93 and mean postprandial=240.45) and post test (mean fasting level=115.17 and mean post prandial=131.30) blood sugar levels (t=7.16 at 0.05 level) for fasting blood sugar and (t=11.38 at 0.05 level) for postprandial blood sugar respectively.

Kervig. (2010) conducted a true experimental study to evaluate the effect of okra on type II diabetes mellitus. 50 clients with type 2 diabetes mellitus (fasting glucose < 200mg/dl) were randomly divided into two groups. Group 1 (n=25) received the okra juice 200 ml/day and the group 2 (n=25) received routine diet. Medications and dietary control was maintained for both the groups. At the end of one month sugar levels was assessed and compared with pre-test values. The group 1 has significantly lower mean fasting and postprandial level than group 2. The results showed that there is a significant reduction in mean fasting and postprandial levels.

Umashanker Maurya. et al.,(2010) conducted an experimental study to evaluate the effect of okra juice on type II diabetes mellitus . Fifty clients with type 2 diabetes mellitus at selected villages of Karnataka. All subjects received the okra juice 100 ml/day. The results showed that there is a significant reduction in mean glucose levels after the intake of okra juice. The study concludes that there is effect of okra extract on blood glucose among type 2 Diabetes mellitus.

Indah Amin. (2009) conducted a pre experimental study on Effect of *Abelmoscus esculentus* on Type 2 Diabetes mellitus to assess the effect of *Abelmoscus esculentus* on type 2 Diabetes mellitus. Sixty clients (30 males and 30 females) from selected areas of Mangalore who have diabetes less than 5 years on treatment were selected. The pre test post prandial glucose levels were recorded. One Okra was slit vertically and soaked overnight so that the mucilage which contains soluble pectin gets dissolved in water about 100 ml and clients were asked to consume every morning in empty stomach continuously for 25 days. The results showed that there is decrease in the post test glucose level.

Sylvia Zook. (2009) has revealed Benefits of ladies finger, Okra is a powerhouse of valuable nutrients, nearly half of which is soluble fibre in the form of gums and pectin. Soluble fibre helps to lower serum cholesterol, reducing the risk of heart disease and has hypoglycemic effect. The other half is insoluble fibre which helps to keep the intestinal tract healthy, decreasing the risk of some forms of cancer, especially colo-rectal cancer. Apparently eating okra on a daily basis is good for diabetes. There are properties in okra that actually help your body to metabolize glucose, thus making you less dependent on insulin substitute medications.

Nidhi Agmina .et al., (2009) conducted an experimental study on Hypoglycemic effect of okra fruit at selected slum areas of Taiwan. 20 Type 2 Diabetic subjects who met the inclusion criteria were selected. The fruits soaked in water and squeezed for the fibres to be soluble .The blood glucose level of samples was noted (mean=145mg/dl).The blood glucose dropped with regular intake of the soaked water for about 50 days (mean=108mg/dl).The study showed that the okra fruit has hypoglycemic effect.

Vijaya Banakar., Usha Malagi., and Rama, K. Naik. (2008) conducted a study on Exploration and Documentation of Indigenous Hypoglycemic Substances of North Karnataka to document indigenous hypoglycemic substances by diabetics of North Karnataka region and five zones viz, dry, coastal, hilly, transitional and north eastern transitional zones were selected randomly from North Karnataka region for documentation study with thirty type 2 diabetics in each zone. The study showed that one okra consumed each day for about 2 months reduces the blood sugar level which indicates that it has hypoglycemic effect.

SECTION B

2.5: CONCEPTUAL FRAMEWORK

The conceptual framework provides a conceptual perspective regarding the interrelating phenomena. It deals with abstractions (concepts) that are assembled by virtue of their relevance to a common theme. Conceptual models are useful in the research process in clarifying concepts and their associations, in enabling researchers to place a specific problem into appropriate context.

This study was based on the concept of lady's finger juice reduces the Blood sugar level among the type 2 Diabetes mellitus clients. The investigator adopted a Widenbach's prescriptive theory (1969) as the foundation for developing the conceptual framework. Ernestin Wiedenback proposes helping art of clinical nursing theory in 1969 for nursing, which describes a desired situation and way to attain it. Nursing is a helping service that is rendered with compassionate skill and understanding to those in need of care, counsels and confidence is the area of health (1977).

Widenbach's theory is made up of three factors as follows:

- The central purpose
- Prescription
- Realities

CENTRAL PURPOSE:

The central purpose defines that quality of health she desires to effect or sustain in her patients and specifies what she recognizes to be her special responsibility in caring for the patient. In this study the central purpose is to assess the effectiveness of lady's finger juice on Blood sugar level among the type 2 Diabetes mellitus clients.

PRESCRIPTION:

Once the nurse identified her own philosophy and recognizes that the patient has autonomy and individuality, she can work with the individual to develop a prescription or plan of his care. It will specify the nature of action that will fulfill the nurse's central purpose. A prescription may be voluntary or involuntary. A prescription is a directive to at least 3 kinds of voluntary actions.

- Mutually understood and agreed upon action (recipient and practitioner)
- Recipient-directed action and (ways in which to be carried out).
- Practitioner-directed actions (practitioner carried action).

In this study, the investigator planned to provide the lady's finger juice for experimental group.

REALITIES:

The realities are:

- Agent
- Recipient
- Goal
- Means
- Framework

THE CONCEPTUAL FRAMEWORK OF THIS NURSING THEORY CONSISTS OF FOLLOWING STEPS

- 1) Identification of the patients need for help
- 2) Ministration of the help needed
- 3) Validation that the action taken was helpful to patient.

IDENTIFICATION OF THE HELP NEEDED:

The nurse identifies the patient need. In this study the need was decrease in fasting and postprandial blood sugar levels among type 2 Diabetes mellitus clients.

MINISTRATION OF THE HELP NEEDED:

Ministering to the patient, the nurses apply a comfort measure, or therapeutic procedure. In this study it refers to administration of lady's finger juice to the type 2 Diabetes mellitus clients.

Ministration had thee two components:

Prescription:

The nurse provides care to the patient. Lady's finger juice was provided to the type 2 Diabetes mellitus clients in the experimental group. Routine treatment was given for the clients in the control group. In this study the Lady's finger juice was prepared by one medium sized lady's finger (approximately 10 cm) slit into 2 halves vertically and soaked in 150 ml of water overnight. The investigator provided the lady's finger juice (after discarding the lady's finger) the next morning before breakfast to the experimental group for 30 days.

Realities:

It refers to the physical, physiological, emotional and spiritual factors that come into play in situation involving nursing action. The five realities identified by Wiedenbach's are agent, recipient, goal, means and framework.

1. Agent: According to the theorist, the agent who is the practicing nurse or her delegate is characterized by the personal attributes, capacities, and most importantly commitment and competencies in nursing. In this study the researcher is the agent.

2. Recipient: According to the theorist the recipient, the patient is characterized by personal attributes, problems, capacities, aspirations and most important the ability to

cope with the problems being experienced. In this study the type 2 diabetes mellitus clients were the recipients.

3. 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 the goal was to reduce the blood sugar level among the type 2 Diabetes mellitus clients.

4. Mean: According to the theorist, the mean comprise the activities and devices through which the practitioner is enabled to attain her goal. In this study, Means were the lady's finger juice.

5. Framework: According to the theorist, it consists of human, environment, professional and organizational facilities that not only make up the context within which nursing is practiced but also constitutes its currently existing limits. In this study the framework was Samayanallur, Madurai.

VALIDATING THE ACTION TAKEN:

After help has been ministered the nurse validates that the actions were indeed helpful. Here the investigator validated by means of post test assessment of blood sugar level both fasting and postprandial blood sugar levels both in experimental and control group. The experimental group had reduction in the blood sugar level after the consumption of the lady's finger juice. The control group had no response.

CENTRAL PURPOSE: ASSESS THE EFFECT OF LADY'S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS

NURSING PRACTICE

**IDENTIFYING
NEED FOR HELP**

Need of patient identified based on demographic and clinical variables: Age, sex, religion, education, occupation, monthly income, duration of illness, family history, type of drug, diet, exercises, monitoring glucose level, BMI

PRE TEST MONITORING OF BLOOD SUGAR

MINISTERING NEED FOR HELP

REALITIES

Agent : Investigator
Recipient : Type II DM clients
Goal : To reduce blood sugar level
Means : Lady's finger juice
Framework : Samavanallur

PRESCRIPTION

**EXPERIMENTAL
GROUP**

**MEDICATION
WITH LADY'S
FINGER JUICE**

**CONTROL
GROUP**

**MEDICATION
WITHOUT
LADY'S FINGER
JUICE**

**VALIDATING
ACTION TAKEN**

POST TEST MONITORING OF BLOOD SUGAR LEVEL

**EXPERIMENTAL
GROUP**

OUTCOME

**CONTROL OF
BLOOD
SUGAR**

**CONTROL
GROUP**

OUTCOME

**LESS CONTROL
OF BLOOD SUGAR
THAN EXP GROUP**

FIGURE 1- MODIFIED MODEL OF WIEDENBACH'S HELPING ART OF CLINICAL NURSING THEORY

CHAPTER - III

RESEARCH METHODOLOGY

Research methodology is the overall plan for addressing the research problem and it covers multiple aspects of study's structure. It acts as a guide for planning, implementation and analysis of the study. It includes the descriptions of the research approaches, research design dependent and independent variables, sampling design, description of the tool, pilot study, and a planned format for data collection and a plan for data analysis.

3.1 RESEARCH APPROACH

The research approach used for the study was Quantitative approach.

3.2 RESEARCH DESIGN

The design used for the study was Quasi experimental Non equivalent control group Pre test post test design.

GROUP	PRE TEST	INTERVENTION	POST TEST
Experimental group	O1	X	O2
Control group	O1	-	O2

O1 - Pre test for both experimental group and control group

X - Intervention to experimental group (Lady's finger juice)

O2 - Post test for both experimental group and control group

3.3 .RESEARCH VARIABLES

Dependent variable: Blood sugar level

Independent Variable: Lady's finger juice.

3.4 SETTING OF THE STUDY

The study was conducted at Samayanallur, Madurai.

3.5 .POPULATION

TARGET POPULATION

The Target population of the study were type 2 diabetes mellitus clients.

ACCESSIBLE POPULATION:

The Accessible population of the study were type 2 diabetes mellitus clients at Samayanallur, Madurai.

3.6 SAMPLE

The sample for the present study comprised of type 2 diabetes mellitus clients at samayanallur who met the inclusion criteria.

SAMPLE SIZE:

The sample size for the study was 60 type 2 diabetes mellitus clients.

3.7 SAMPLING TECHNIQUE

A Sample for the study was selected through Non probability purposive sampling technique.

3.8 CRITERIA FOR SAMPLE SELECTION

Inclusion criteria for sampling:

- The clients who had type 2 diabetes mellitus within 5 years of duration.
- Diabetic clients who were in the age group of 40-60 years.
- Who were on oral hypoglycemic (single drug).
- Clients with fasting blood sugar more than 126 mg/dl and postprandial blood sugar more than 140 mg/dl
- Clients include both genders.

Exclusion criteria for sampling:

- Type 2 diabetes mellitus clients who had any other co-morbidities like arthritis, hypertension, cardiovascular, renal and neurologic problems.
- Type 2 diabetic clients who were on insulin treatment.
- Gestational Diabetes mellitus.
- Clients on anticoagulants and antihypertensives.
- Clients with history of alcoholism and smoking.

3.9 METHOD OF SAMPLE SELECTION

The samples were selected from Muthuramalinga Devar East Street and Muthuramalinga Devar Extension at Sathyamoorthy nagar, Samayanallur, those who

fulfil the inclusion criteria. Non probability Purposive sampling technique was used for sample selection. The samples were divided into experimental and control group.

3.10 RESEARCH TOOL

The tool was developed after extensive review of literature, internet sources and discussion with experts.

DESCRIPTION OF THE TOOL

The tool consists of following three sections;

Section A: This section consists of questions which seek information regarding demographic data such as age, sex, education, occupation, marital status ,type of family, family history of diabetes mellitus, food habits.

Section B: This section consists of questions which seek information regarding clinical data such as duration of illness, duration of treatment, drug compliance, type of medications taken, sleeping hours, exercise, practice of yoga, body mass index, and practice of diabetic diet, sweet intake, roots and tuber intake, and frequency of blood glucose monitoring.

Section C: This section consists of assessment of client's blood sugar level (fasting and post prandial) by bio physiological measurement using Glucometer.

TESTING OF THE TOOL

3.11 CONTENT VALIDITY

The tools used for this study was validated by three experts in the field of Nursing, Director of preventive and social medicine and one physician for content

validity. Suggestions were considered and appropriate changes were made and found to be valid.

3.12 RELIABILITY

The reliability certificate was obtained from Quality concepts laboratory at Madurai, for the instrument glucometer. After pilot study, reliability of the tool was assessed by using test retest method. Correlation coefficient values are 0.83. This correlation coefficient was very high and it was a good tool for assessing the effectiveness of lady's finger juice on blood sugar level among type 2 Diabetes mellitus clients.

3.13 ETHICAL CONSIDERATION

A formal permission was obtained from Deputy Director of Health services, Madurai. Ethical consideration was acquired from the Institutional Review Board, Madurai Medical College, Madurai. Information was given to all the subjects about the purpose of study. Informed consent was obtained from the subjects. The subjects had the complete freedom to withdraw the study to their reason.

3.14 PILOT STUDY

The pilot study was conducted to test the feasibility of setting, samples, relevance and practicability of the intervention. A formal permission was obtained from the Deputy Director of Health services, Madurai to conduct the pilot study. Pilot study was conducted in Samayanallur, Madurai from 16.9.2013 to 22.9.2013. A brief self introduction was given to the subjects. Using purposive sampling technique, 10 subjects who met the inclusion criteria were selected. Out of 10 subjects, 5 were in the experimental and remaining 5 subjects in the control group.

The purpose of the study was explained to the clients and after getting informed consent, the baseline data was collected. Fasting and post prandial blood sugar was checked for both the groups on day 1. From the next day, the lady's finger juice was given to the experimental group every day morning in empty stomach for 7 days. The acceptance level was high among the samples and they were very interested and cooperative in consuming the juice. The pilot study showed that the study was researchable and feasible.

3.15 DATA COLLECTION PROCEDURE

The Formal permission to conduct the study was obtained from respective authorities and Institutional Review Board of Madurai Medical College, Madurai. The study period was from 1.10.2013 to 30.10.2013 for 4 weeks. A brief self introduction was given to the subjects. The data has been collected from the subjects who were interested to participate in the study who met the inclusion criteria and 60 samples were selected through non probability purposive sampling technique which includes clients who are more representative or informative for the study at Muthuramalinga Devar East Street and Muthuramalinga Devar Extension at Sathyamoorthy nagar, Samayanallur. Then the subjects were divided into experimental and control group. Informed consent was obtained from each subject after giving assurance of confidentiality. Before intervention the subjects were interviewed in order to collect demographic data and the clinical data. On the first day, the fasting and post prandial blood glucose level were monitored by using glucometer for both the groups and from day 2 the lady's finger juice was given to the experimental group in empty stomach daily for 30 days. The control group were on regular treatment. On Day 31, the investigator monitored the fasting and post prandial blood sugar levels for both groups

by using the glucometer. After the study period, the effect of lady's finger juice was taught to the control group.

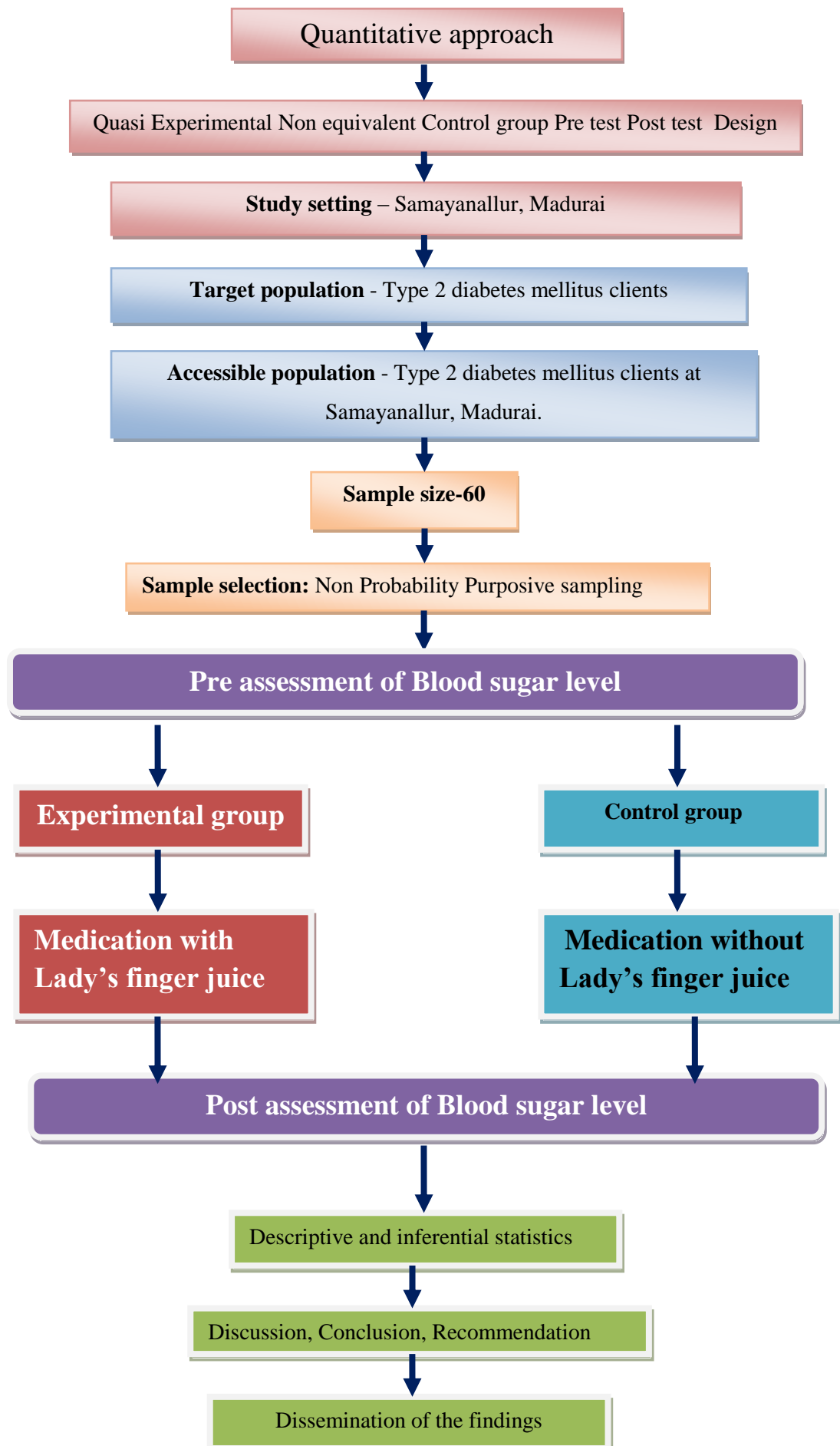
3.16 PLAN FOR DATA ANALYSIS:

Data were analyzed using both descriptive and inferential statistics. Tests used in this study were frequency and percentage distribution, standard deviation, mean, F test/ANOVA, and 't' test. Base line variables were analyzed by frequency and percentage distribution. Mean, Standard deviation were used to analyze the blood sugar level among type 2 Diabetes mellitus clients both in experimental and in the control group. 't' test was used to evaluate the effectiveness of lady's finger juice on blood sugar among type 2 Diabetes mellitus clients . F test/ANOVA was used to find the association between the post test blood sugar level in experimental group and selected demographic and clinical variables. The significant findings of the study were expressed in the form of tables and diagrams.

3.17 PROTECTION OF HUMAN RIGHTS:

The proposed study was conducted after the approval of dissertation committee of College of nursing, Madurai medical college, Madurai. In order to protect the human rights, ethical committee approval was obtained on the month of September, Madurai Medical College, Madurai. In addition the permission was obtained from Deputy Director of health services, Madurai. Both verbal and written consent was obtained from all the study subjects and the data collection was kept confidential. The possible benefit of participating in the study was explained to all the subjects. Reassurance was given to the clients, that confidentiality and privacy would be maintained throughout the study.

3.18 SCHEMATIC REPRESENTATION OF RESEARCH STUDY



CHAPTER – IV

DATA ANALYSIS & INTERPRETATION

Analysis is a method of rendering data in quantitative, meaningful and intelligible manner, so that research problem can be studied and tested and the relationship between the variables can be found. (**Polit and hungler (2006)**).

Analysis and interpretation of data is the most important phase of the research process, which involves the computation of certain measures along with searching for patterns of relationship that exists among data groups (**Suresh K Sharma 2011**).

This chapter deals with analysis and interpretation of data collected from 60 type 2 Diabetes mellitus clients residing at Samayanallur, Madurai to assess the effectiveness of lady's finger juice on blood sugar level.

ORGANIZATION OF DATA

The findings of the study were grouped and analyzed under the following sections:

- SECTION A:** Base line characteristics of the experimental and control group
- SECTION B:** Assessment of blood sugar level among type 2 diabetes mellitus clients in the experimental and control group.
- SECTION C:** Evaluate the effectiveness of lady's finger juice on blood sugar level among type 2 diabetes mellitus clients in the experimental group.
- SECTION D:** Association of post test blood sugar levels with their selected demographic and clinical variables in the experimental group.

SECTION - A

BASE LINE CHARACTERISTICS OF EXPERIMENTAL AND CONTROL GROUP

TABLE 1

**Frequency and percentage distribution of Demographic variables
among type 2 Diabetes Mellitus clients in experimental and control
group n =60**

S.NO	DEMOGRAPHIC VARIABLE	EXPERIMENTAL GROUP		CONTROL GROUP	
		f	%	f	%
1.	Age				
	a) 40-45 Years	4	13.33%	7	23.33%
	b) 46-50 Years	16	53.34%	12	40%
	c) 51-55 Years	7	23.33%	9	30%
	d) 56-60 Years	3	10%	2	6.67%
2.	Sex				
	a) Male	17	56.67%	16	53.33%
	b) Female	13	43.33%	14	46.67%
3.	Education				
	a) Primary education	7	23.33%	8	26.67%
	b) Middle education	9	30%	7	23.33%
	c) Higher secondary	2	6.67%	4	13.33%
	d) Graduate	2	6.67%	0	0
	e) No formal education	10	33.33%	11	36.67%
4.	Occupation				
	a) Sedentary	2	6.67%	1	3.33%
	b) Moderate	8	26.66%	7	23.33%
	c) Heavy	9	30%	13	43.34%
	d) Unemployed	11	36.67%	9	30%
5.	Marital status				
	a) Married	30	100%	30	100%
	b) Single	0	0	0	0
	c) Divorced	0	0	0	0
6.	Type of family				
	a) Nuclear	13	43.34%	12	40%
	b) Joint	15	50%	18	60%
	c) Separated	2	6.66%	0	0

S.NO	DEMOGRAPHIC VARIABLE	EXPERIMENTAL GROUP		CONTROL GROUP	
		f	%	f	%
7.	Family Income per month				
	a) Less than Rs.3000	14	46.67%	12	40%
	b) Rs.3001-6000	4	13.33%	13	43.33%
	c) Rs.6001-9000	10	33.33%	5	16.67%
	d) More than Rs.9000	2	6.67%	0	0
8.	Family history of Diabetes mellitus				
	a) Father	5	16.67%	1	3.33%
	b) Mother	2	6.67%	7	23.33%
	c) Paternal grandparent	0	0	3	10%
	d) Maternal grandparent	6	20%	0	0
	e) Not applicable	17	56.66%	19	63.34%
9.	Food habit				
	a) Vegetarian	14	46.67%	11	36.67%
	b) Mixed vegetarian	16	53.33%	19	63.33%

The above table represents that, in the experimental group about 4 person (13.33%) belongs to the age group of 40-45 years, 16 (53.34%) were between the age group of 46-50 years, 7 (23.33%) belongs to the age group of 51-55 years and 3 (10%) were between 56-60 years whereas in control group 7 (23.33%) belongs to 40-45 years of age group, 12 (40%) were between 46-50 years, 9 (30%) belongs to 51-55 years age and 2 (6.67%) were between 56-60 years of age. With respect to **sex**, majority of samples were males both in the experimental group 17 (56.567%) and control group 16 (53.33%). Whereas the female samples in the experimental group were 13 (43.33%) and control group were 14 (46.67%).

Regarding **education**, in the experimental group, about 7 (23.33%) had studied primary education, 9 (30%) had middle education, 2 (6.67%) studied higher secondary, 2 (6.67%) were graduate and 10 (33.33%) had no formal education. In control group, 8 (26.67%) had primary education, 7 (23.33%) studied middle education, 4 (13.33%) had higher secondary education, 11 (36.67%) had no formal education and no one were graduates.

With regards to **occupation**, in the experimental group, about 2 (6.67%) had sedentary work, 8 (26.66%) had moderate work, 9 (30%) had heavy work and 11 (36.67%) were unemployed. In control group about 1 (3.33%) had sedentary work, 7 (23.33%) had moderate work, 13 (43.34%) had heavy work and 9 (30%) were unemployed. When **marital status** is considered, in both the experimental and control group all (100%) were married.

With regards to the **type of family**, in the experimental group, about 13 (43.34%) belongs to nuclear family, 15 (50%) belongs to joint family and 2 (6.66%) were separated. Whereas in the control group, 12 (40%) belongs to nuclear family, 18 (60%) belongs to joint family and no one were separated.

Considering the **family income** per month, in the experimental group about 14 (46.67%) had less than Rs.3000 per month, 4 (13.33%) had Rs.3001-6000, 10 (33.33%) had Rs.6001-9000 and 2 (6.67%) had more than Rs.9000. In the control group, about 12 (40%) had less than Rs.3000 per month .13 (43.33%) had Rs.3001-6000, remaining 5 (16.67%) had Rs.6001-9000 of family income respectively.

With the view of **family history** of diabetes mellitus, in the experimental group, 5 (16.67%) had father with diabetes mellitus, 2 (6.67%) had mother, 6 (20%) had maternal grandparent with diabetes mellitus and 17 (56.66%) was not applicable. Whereas in the control group, 1(3.33%) had father with diabetes mellitus, 7(23.33%) had mother with diabetes mellitus and 19 (63.34%) was not applicable.

When considering the **food habit**, in the experimental group, (53.33%) were mixed vegetarians and in the control group, (63.33%) were mixed vegetarians respectively.

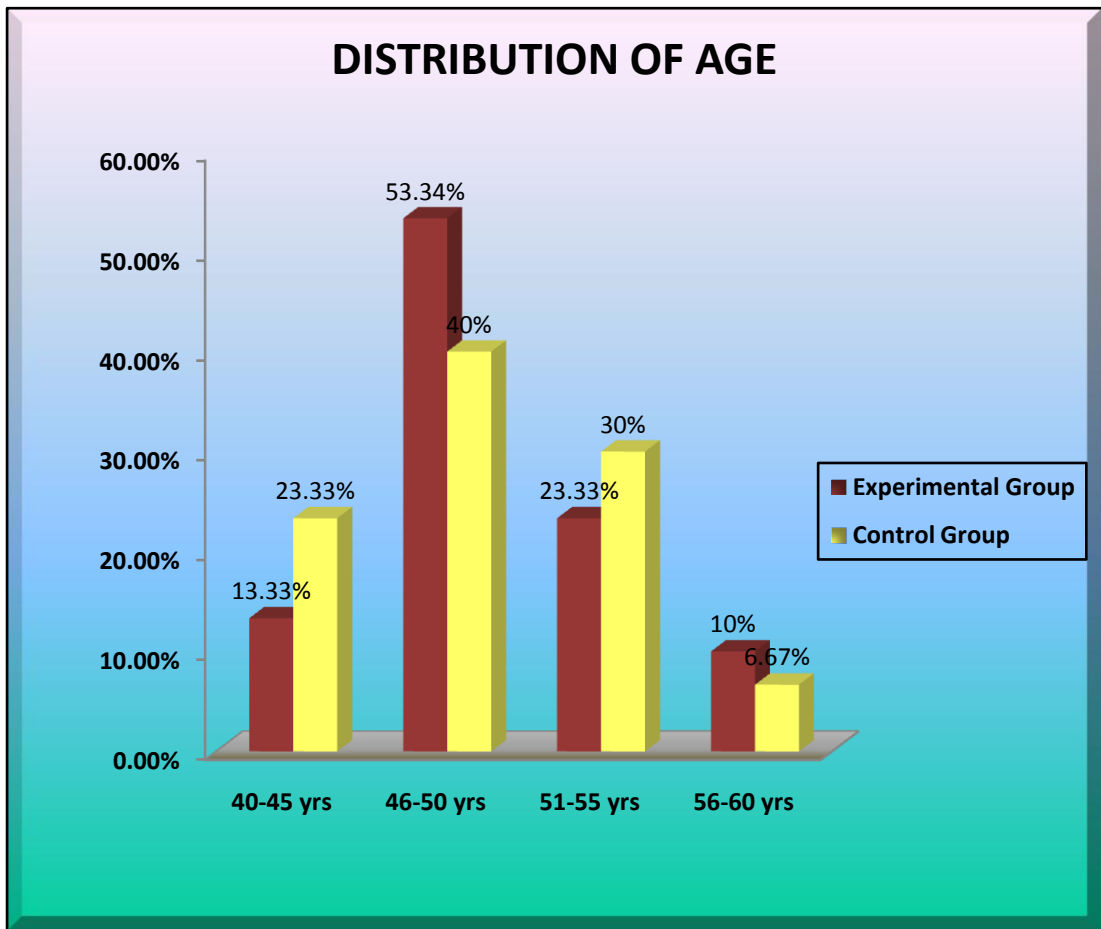


Fig.2. Percentage distribution of age among experimental and control group

The above bar diagram shows that in the experimental group, about 16 (53.34%) were in the age group 46-50 years, 7 (23.33%) belongs to the age group of 51-55 years whereas in the control group 12 (40%) were between 46-50 years, 9 (30%) belongs to 51-55 years age .

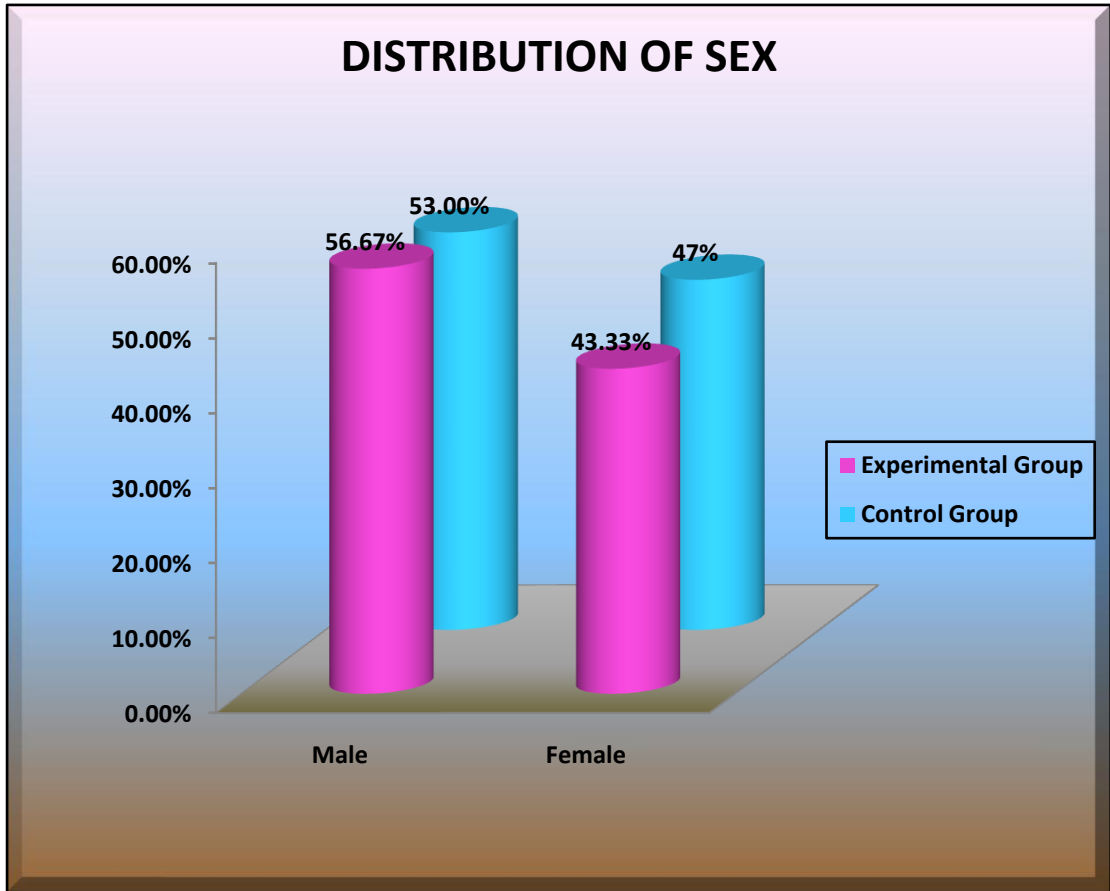


Fig.3. Percentage distribution of sex among experimental and control group

The above cylindrical diagram shows that Majority of samples were males both in the experimental 17 (56.567%) and control group 16 (53%). Whereas the female samples in the experimental group were 13 (43.33%) and control group 14 (47%) respectively.

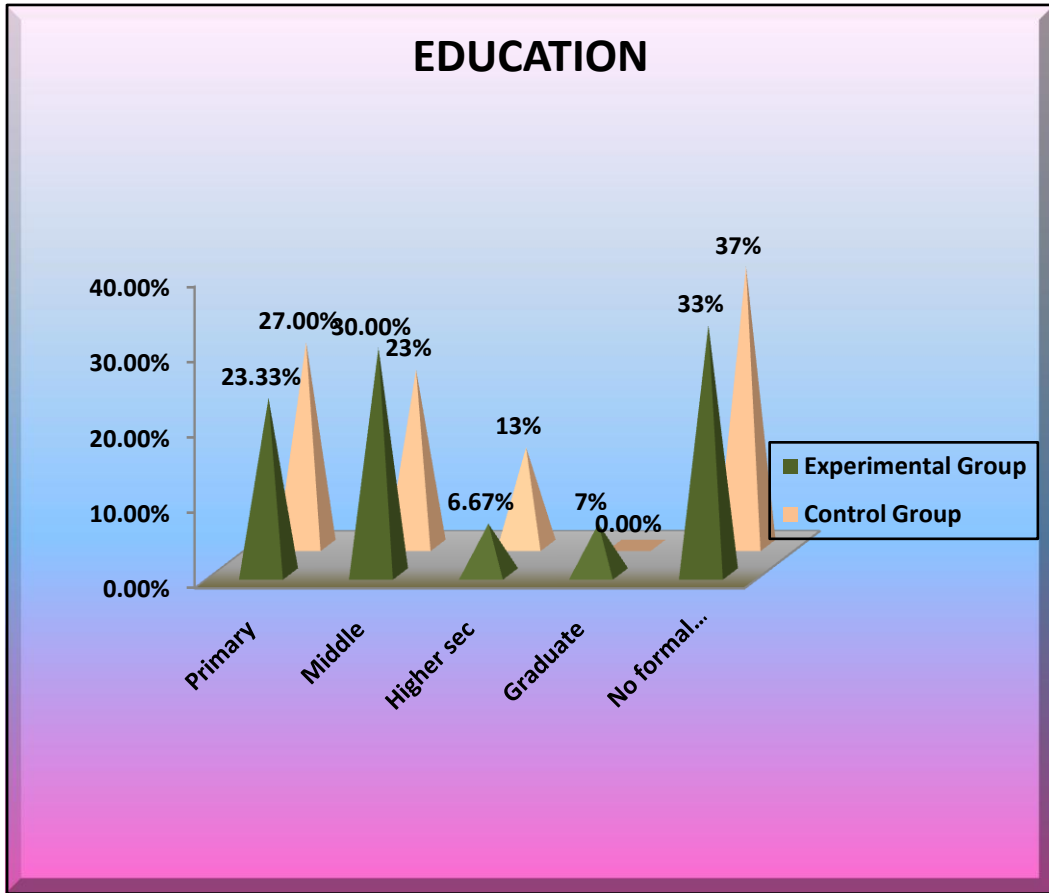


Fig.4. Percentage distribution of education among experimental and control group

The above conical diagram shows that in the experimental group, about 7 (23.33%) were up to the level of primary education, 9 (30%) had middle education and 10 (33%) had no formal education. In control group, 8 (26.67%) had primary education, 7 (23.33%) had middle education, 11 (36.67%) had no formal education.

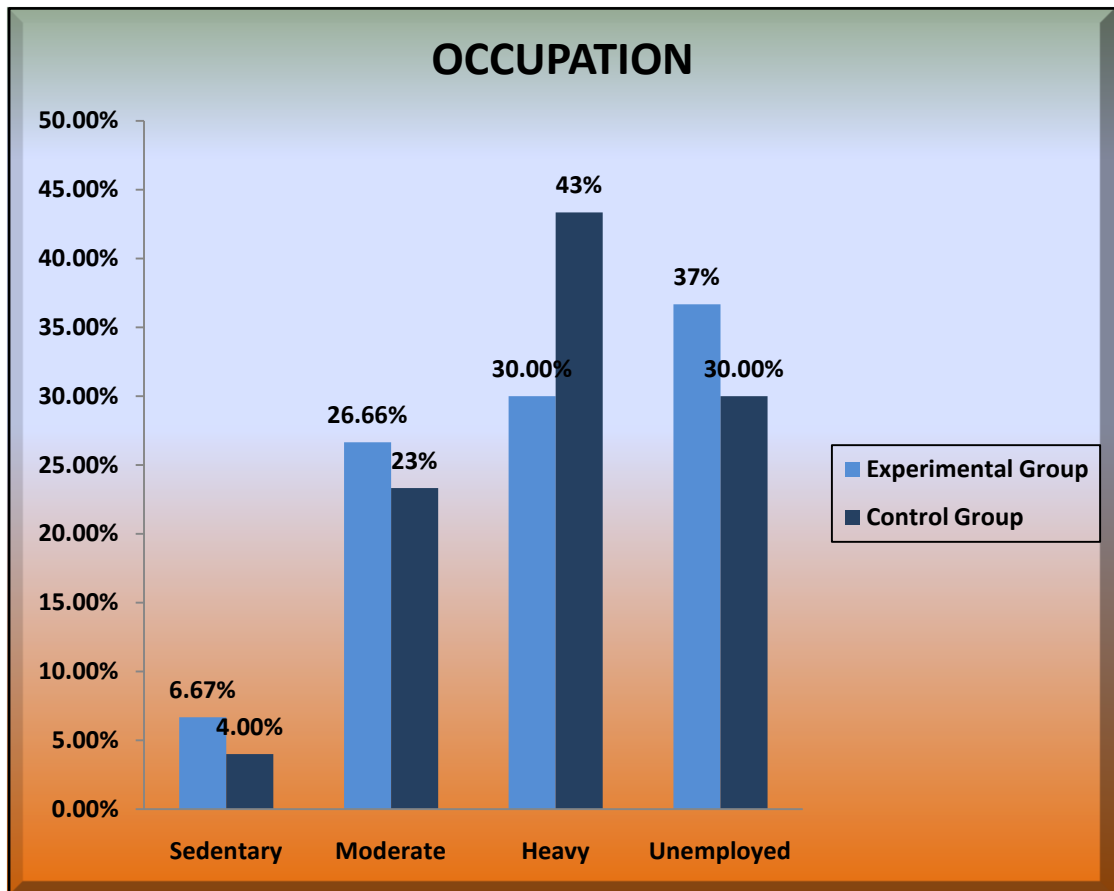


Fig.5. Percentage distribution of occupation among experimental and control group

The above bar diagram shows that in the experimental group, 9 (30%) had heavy work and 11 (37%) were unemployed. In control group about 7 (23%) had moderate work, 13 (43%) had heavy work and 9 (30%) were unemployed.

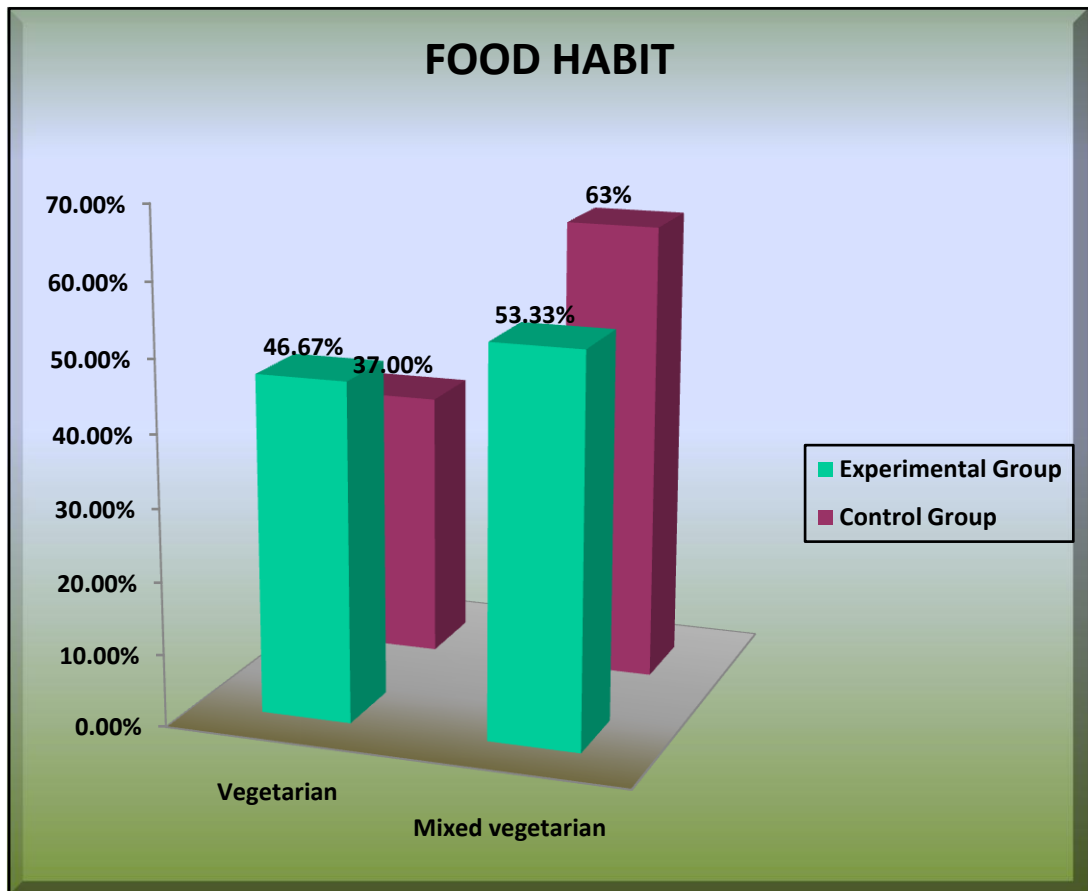


Fig.6. Percentage distribution of food habit among experimental and control group

The above bar diagram shows that in the experimental group, 14 (46.67%) were vegetarians and 16 (53.33%) were mixed vegetarians. In the control group, 11 (37%) were vegetarians and 19 (63%) were mixed vegetarians respectively.

TABLE 2

Frequency and percentage distribution of Clinical variables among type 2 Diabetes Mellitus clients in experimental and control group

n =60

S.NO	CLINICAL VARIABLE	EXPERIMENTAL GROUP		CONTROL GROUP	
		f	%	f	%
1.	Duration of Illness				
	a) Less than one year	4	13.33%	2	6.66%
	b) 1-3 years	19	63.34%	14	46.67%
	c) 3-5 years	7	23.33%	14	46.67%
2.	Duration of treatment				
	a) Less than one year	4	13.33%	2	6.66%
	b) 1-3 years	19	63.34%	14	46.67%
	c) 3-5 tears	7	23.33%	14	46.67%
3.	Drug compliance				
	a) Regular	27	90%	29	96.67%
	b) Irregular	3	10%	1	3.33%
4.	Specify the medication				
	a) Allopathy	28	93.33%	29	96.67%
	b) Homeopathy	0	0	0	0
	c) Siddha	0	0	0	0
	d) Naturopathy	2	6.67%	1	3.33%
5.	Sleeping hours				
	a) Less than 8 hours	12	40%	18	60%
	b) 8 hours	13	43.33%	8	26.67%
	c) More than 8 hours	5	16.67%	4	13.33%
6.	Exercise				
	a) Regular	6	20%	8	26.67%
	b) Irregular	5	16.67%	6	20%
	c) Not doing	19	63.33%	16	53.33%

S.NO	CLINICAL VARIABLE	EXPERIMENTAL		CONTROL	
		GROUP		GROUP	
7.	Practice of Yoga a) Regular b) Irregular c) Not doing	1 2 27	3.33% 6.67% 90%	0 1 29	0 3.33% 96.67%
8.	Body mass Index a) Less than 18.50 b) 18.50-24.99 c) 25-30 d) More than 30	2 11 16 1	6.67% 36.67% 53.33% 3.33%	1 17 12 0	3.33% 56.67% 40% 0
9.	Practice of Diabetic diet a) Yes b) No	23 7	76.67% 23.33%	21 9	70% 30%
10.	How strict are you restricting sweet intake a) Fully restricted b) Sometimes I eat c) I take as I like	23 6 1	76.67% 20% 3.33%	21 7 2	70% 23.33% 6.67%
11.	Restricting roots and tubers intake a) Fully restricted b) Sometimes I eat c) I take as I like	23 6 1	76.67% 20% 3.33%	21 5 4	70% 16.67% 13.33%
12.	How often do you check your blood glucose status a) Once in a month b) Once in 3 months c) Once in 6 months d) Only when needed	7 9 12 2	23.33% 30% 40% 6.67%	4 9 11 6	13.33% 30% 36.67% 20%

The above table represents that with regards to **duration of illness**, in the experimental group, 4 (13.33%) had the duration of illness less than 1 year, 19 (63.34%) had 1-3 years of illness, and 7 (23.33%) had 3-5 years of illness. In the control group 2 (6.66%) had duration of illness less than 1 year, 14 (46.67%) had 1-3 years of illness, and 14 (46.67%) had the illness between 3-5 years.

With respect to **duration of treatment**, in the experimental group, about 4 (13.33%) had duration of treatment less than 1 year, 19 (63.34%) had treatment for 1-3 years, and 7 (23.33%) had treatment between 3-5 years. In the control group 2 (6.66%) had duration of treatment less than 1 year, 14 (46.67%) had treatment 1-3 years duration and 14 (46.67%) had treatment between 3-5 years duration.

Regarding **drug compliance**, majority 27 (90%) in the experimental group had regular drug compliance and about 3 (10%) had irregular drug compliance. Also in the control group, 29 (96.67%) had regular drug compliance and 1 (3.33%) had irregular drug compliance.

With the view of **medication taken**, in the experimental group, about 28 (93.33%) had allopathy medications and 2 (6.67%) had naturopathy medications. In the control group, about 29 (96.67%) had allopathy medications and 1 (3.33%) had naturopathy.

When **sleeping hours** is considered, in the experimental group 12 (40%) had less than 8 hours of sleep per day, about 13 (43.33%) had 8 hours of sleep and 5 (16.67%) had more than 8 hours of sleep. In the control group, 18 (60%) had less than 8 hours of sleep per day, about 8 (26.67%) had 8 hours of sleep and 4 (13.33%) had more than 8 hours of sleep.

With regards to **exercise**, in the experimental group about 6 (20%) had regular exercise, 5 (16.67%) had irregular exercise and 19 (63.33%) did not do any exercise. In the control group, 8 (26.67%) had regular exercise, 6 (20%) had irregular exercise and 16 (53.33%) did not do exercise.

In practicing **yoga**, in the experimental group 1 (3.33%) had practice of yoga regularly, 2 (6.67%) had irregular practice of yoga and 27 (90%) did not practice yoga. In the control group, 1 (3.33%) had irregular practice and 29 (96.67%) did not practice yoga.

With respect of **body mass index**, in the experimental group, 2 (6.67%) had body mass index less than 18.50, 11(36.67%) had between 18.50-24.99, 16 (53.33%) between 25-30 and 1 (3.33%) above 30. In the control group, 1 (3.33%) had body mass index less than 18.50, 17 (56.67%) had between 18.50-24.99, 12 (40%) between 25-30 respectively.

With regards to practice of **diabetic diet**, majority in the experimental group 23 (76.67%) practice diabetic diet and 7 (23.33%) did not practice diabetic diet. In the control group, about 21 (70%) practices diabetic diet and 9 (30%) did not practice diabetic diet.

With the view of **sweet intake and roots and tuber intake**, in the experimental group, about 23 (76.67%) fully restricts sweet intake and roots and tubers intake, 6 (20%) sometimes consumes and 1 (3.33%) consumes as they like. In the control group, about 21 (70%) fully restricts sweet intake and roots and tubers intake, 7 (23.33%) sometimes consumes sweets, 2 (6.67%) consumes sweets as they like, 5 (16.67%) sometimes consumes roots and tubers, 4 (13.33%) consumes roots and tubers as they like.

With respect to **checking blood glucose status**, in the experimental group, 7 (23.33%) checks once a month, 9 (30%) checks blood glucose status once in 3 months, 12 (40%) once in 6 months and 2 (6.67%) checks only when needed. In the control group, 4 (13.33%) checks once a month, 9 (30%) checks blood glucose status once in 3 months, 11 (36.67%) once in 6 months and 6 (20%) checks only when needed.

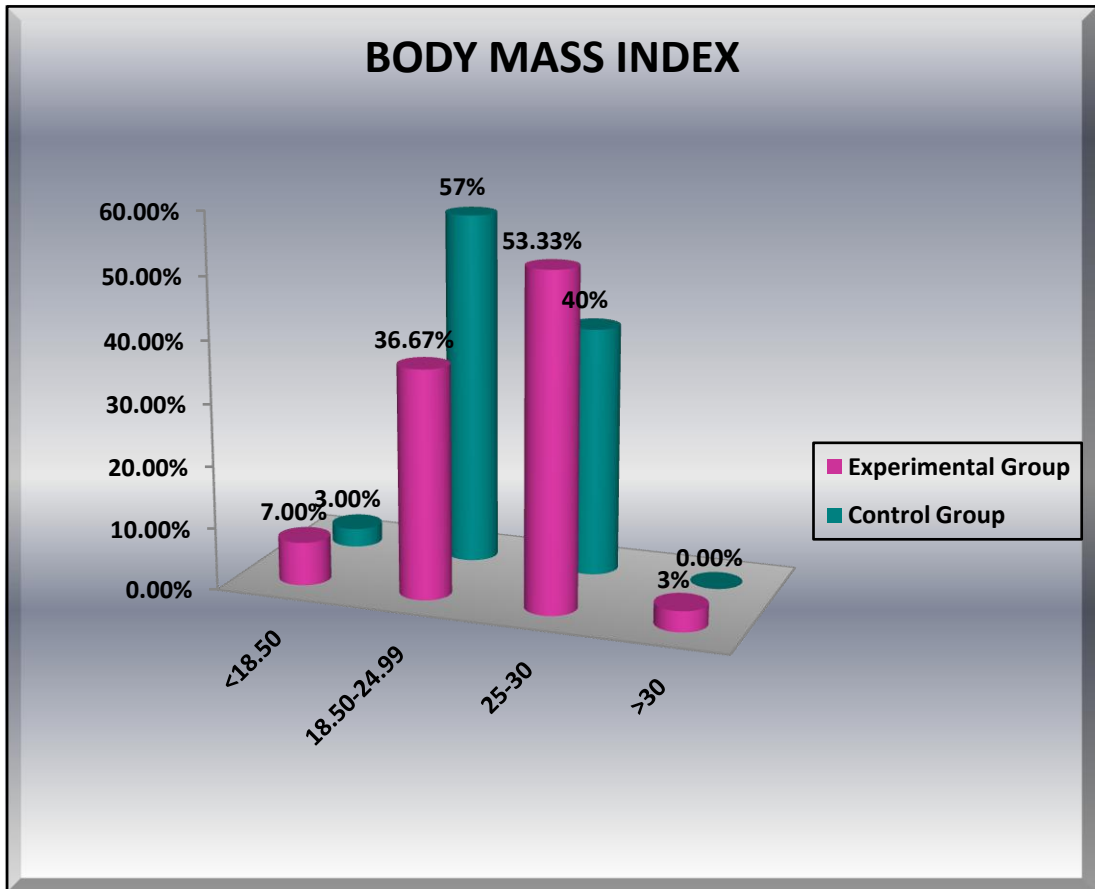


Fig.7. Percentage distribution of body mass index among experimental and control group

The above cylindrical diagram shows that in the experimental group, 2 (7%) had body mass index less than 18.50, 11(36.67%) had between 18.50-24.99, 16 (53.33%) between 25-30 and 1 (3%) above 30. In the control group, 1 (3%) had body mass index less than 18.50, 17 (56.67%) had between 18.50-24.99, 12 (40%) between 25-30 respectively.

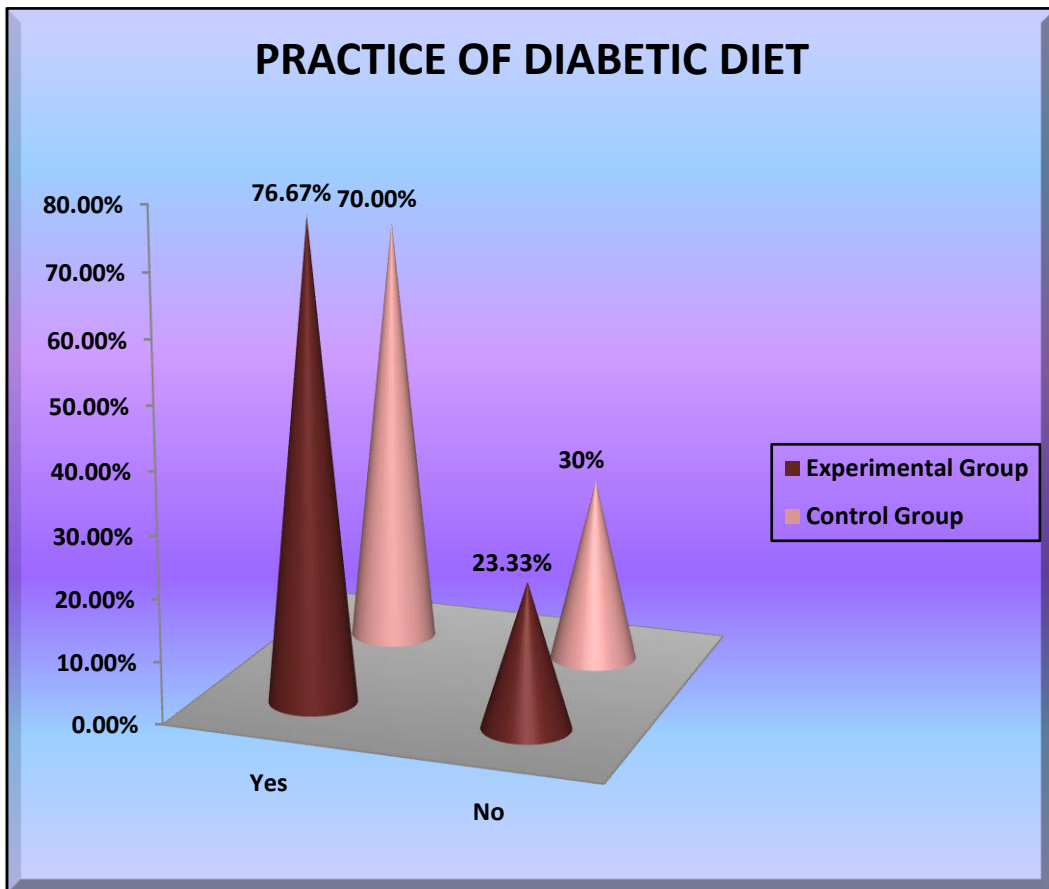


Fig.8. Percentage distribution of practice diabetic diet among experimental and control group

The above conical diagram shows that majority in the experimental group 23 (76.67%) practice diabetic diet and 7 (23.33%) did not practice diabetic diet. In the control group, about 21 (70%) consumes diabetic diet and 9 (30%) did not practice diabetic diet.

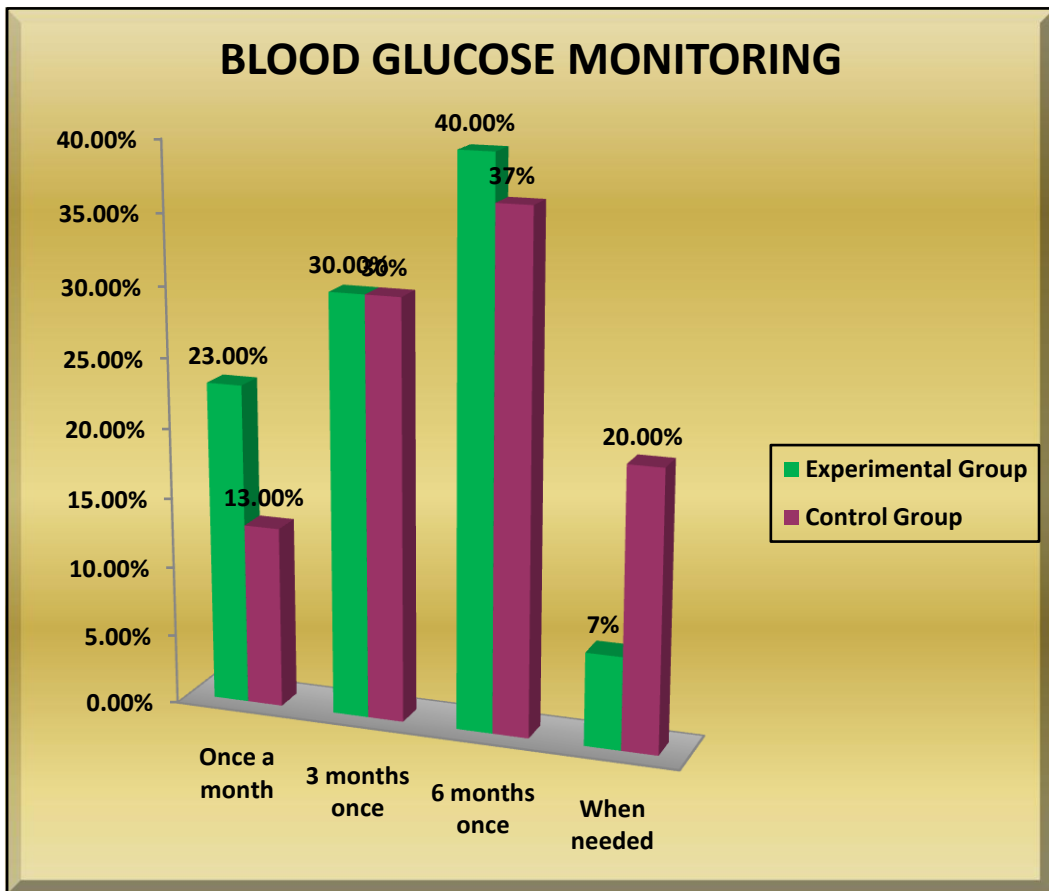


Fig.9. Percentage distribution of blood glucose monitoring among experimental and control group

The above bar diagram shows that in the experimental group, 7 (23%) checks blood glucose once a month, 9 (30%) checks blood glucose status once in 3 months, 12 (40%) once in 6 months and 2 (7%) checks only when needed. In the control group, 4 (13%) checks once a month, 9 (30%) checks blood glucose status once in 3 months, 11 (36%) once in 6 months and 6 (20%) checks only when needed.

SECTION: B

ASSESSMENT OF BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS IN THE EXPERIMENTAL AND CONTROL GROUP

Table 3

The frequency and percentage distribution of pre test fasting blood sugar level in experimental and control group

Fasting blood sugar level in mgs%	PRE TEST			
	Experimental group		Control group	
	n	%	n	%
80 – 120	0	0%	0	0%
121 – 160	24	80%	21	70%
161 – 200	6	20%	9	30%
Total	30	100.0%	30	100.0%

The above table depicts that in the pre test, among the experimental group 80% of the type II diabetes mellitus subjects were in the range of 121- 160mg of fasting blood sugar level and 20% of them were in the range of 161-200 mg blood sugar level.

Among the control group, 70% of the type II diabetes mellitus subjects were in the range of 121- 160 mg of fasting blood sugar level and 30% of them were in the range of 161-200 mg of fasting blood sugar level.

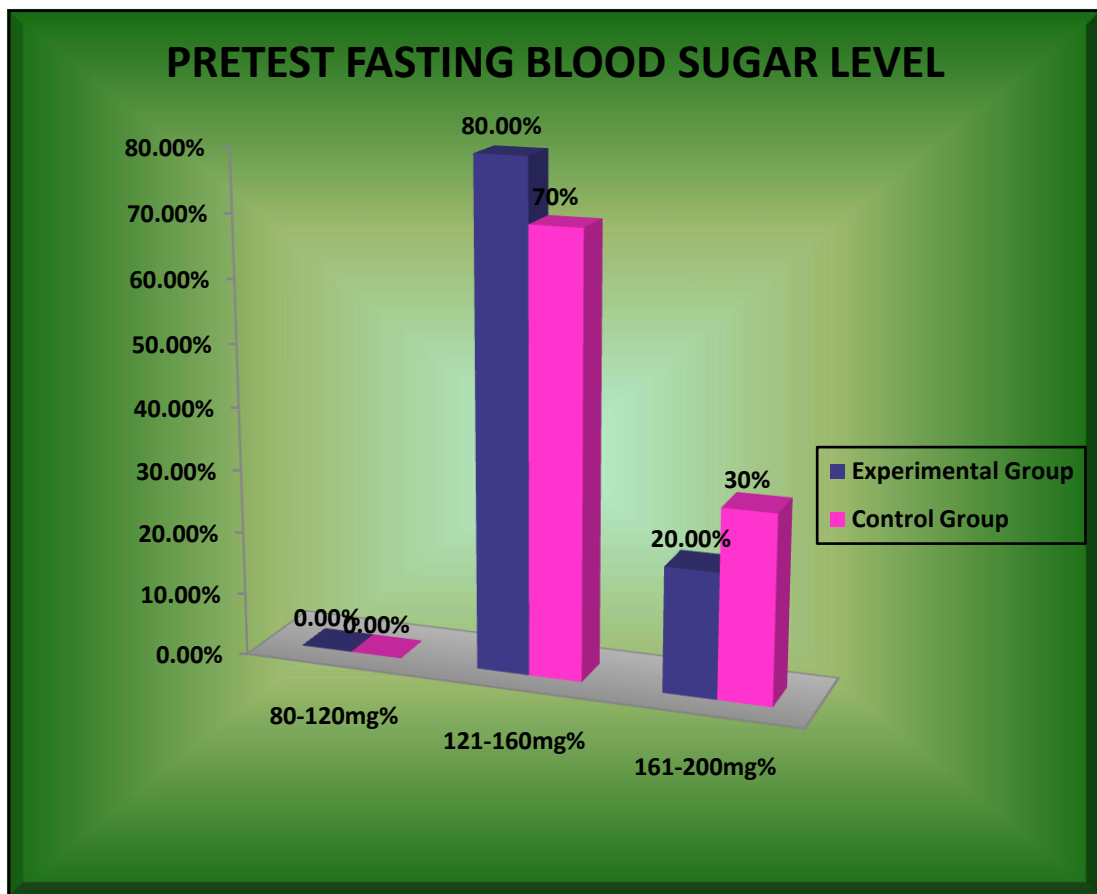


Fig.10. Percentage distribution of pretest fasting blood sugar level among experimental and control group

The above bar diagram shows that in the pre test, among the experimental group 80% of the type II diabetes mellitus subjects were in the range of 121- 160mg of fasting blood sugar level and 20% of them were in the range of 161-200 mg blood sugar level. Whereas in the control group , 70% of the type II diabetes mellitus subjects were in the range of 121- 160 mg of fasting blood sugar level and 30% of them were in the range of 161-200 mg of fasting blood sugar level.

Table 4

The frequency and percentage distribution of pre test postprandial blood sugar level for experimental and control group

Postprandial blood sugar level in mgs%	PRE TEST			
	Experimental group		Control group	
	n	%	n	%
<140	0	0%	0	0%
141 – 180	4	13.33%	8	26.67%
181 – 220	24	80%	18	60%
>220	2	6.67%	4	13.33%
Total	30	100.0%	30	100.0%

The above table depicts that in the **pre test**, among the experimental group 13.33% of the type II diabetes mellitus subjects were in the range of 141- 180mg of post prandial blood sugar level and 80% of them were in the range of 181-220 mg blood sugar level and 6.67% of subjects were above 220mg/dl.

Among the control group , 26.67% of the type II diabetes mellitus subjects were in the range of 141- 180 mg/dl of post prandial blood sugar level and 60% of them were in the range of 181-220 mg/dl and 13.33% were in the range of >220mg/dl of post prandial blood sugar level.

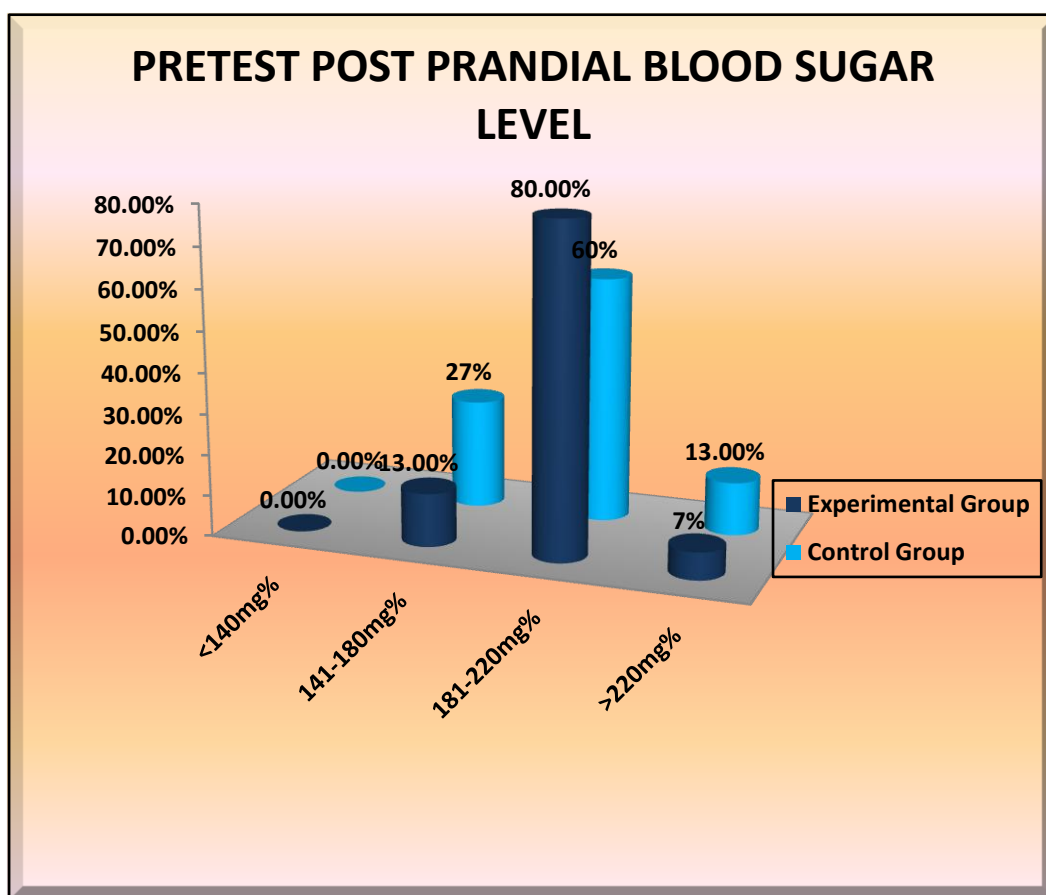


Fig.11. Percentage distribution of Pretest Post prandial blood sugar level among experimental and control group

The above cylindrical diagram shows that in the pre test, among the experimental group 13.33% of the type II diabetes mellitus subjects were in the range of 141- 180mg of post prandial blood sugar level and 80% of them were in the range of 181-220 mg blood sugar level and 6.67% of subjects were above 220mg. Among the control group , 26.67% of the type II diabetes mellitus subjects were in the range of 141- 180 mg of post prandial blood sugar level and 60% of them were in the range of 181-220 mg and 13.33% were in the range of >220mg/dl of post prandial blood sugar level.

Table 5

The mean and SD of pretest fasting and post prandial blood sugar level among the experimental and control group

GROUP	N	FASTING BLOOD SUGAR		POST PRANDIAL BLOOD SUGAR	
		MEAN	STANDARD DEVIATION	MEAN	STANDARD DEVAITION
EXPERIMENTAL	30	148.2	15.5	197.73	15.9
CONTROL	30	149.8	16.21	194.93	19.19

In the above table, the mean pretest fasting blood sugar level among the experimental group was 148.2 with standard deviation of 15.5 and in the control group, the mean fasting blood sugar level was 149.8 with standard deviation of 16.21. The mean pretest post prandial blood sugar level among the experimental group was 197.73 with standard deviation of 15.9 and in the control group, the mean post prandial blood sugar level was 194.93 with standard deviation of 19.19.

SECTION: C

EVALUATE THE EFFECTIVENESS OF LADY'S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS IN THE EXPERIMENTAL GROUP.

Table 6

The mean, SD, and 't' value of blood sugar level between pretest and post test in experimental group

BLOOD SUGAR	TEST	N	MEAN	SD	t VALUE
FASTING BLOOD SUGAR LEVEL	PRETEST	30	148.2	15.5	t= 10.26 (P<0.05) Significant
	POST TEST	30	116.8	6.3	
POSTPRANDIAL BLOOD SUGAR LEVEL	PRETEST	30	197.73	15.9	t=14.4 (P<0.05) Significant
	POST TEST	30	146.67	12	

The above table depicts the mean pretest fasting blood sugar level was 148.2 with standard deviation of 15.5 and the post test mean was 116.8 with standard deviation of 6.3 respectively. The test of significance was calculated using paired t-test. The obtained t-value is 10.26 (P<0.05), which was statistically significant.

With respect to post prandial blood sugar levels, the pretest mean was 197.73 with standard deviation of 15.9 and post test mean was 146.67 with standard deviation of 12. The obtained t-value was 14.4 (P<0.05) which was statistically significant.

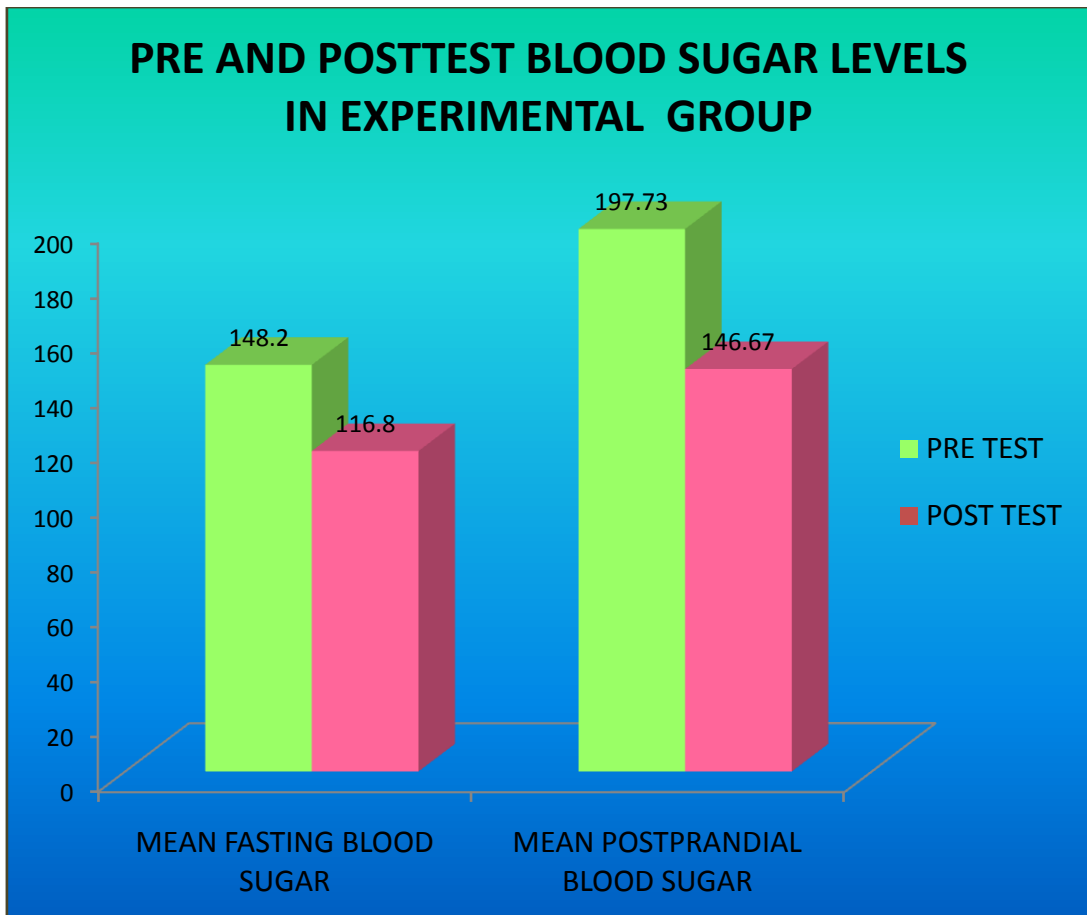


Fig.12. Distribution of mean pretest and post test blood sugar levels in experimental group

The above bar diagram shows that in the experimental group, the mean pre test fasting blood sugar level was 148.2 which was reduced to 116.8 in the post test. Also the mean post prandial blood sugar levels were reduced from 197.73 in the pretest to 146.67 in the post test respectively.

Table 7

The mean, SD, and 't' value of blood sugar level between pretest and post test in control group

BLOOD SUGAR	TEST	N	MEAN	SD	t VALUE
FASTING BLOOD SUGAR LEVEL	PRETEST	30	149.8	16.21	t=5.68 (P<0.05) Significant
	POST TEST	30	140.6	13.73	
POSTPRANDIAL BLOOD SUGAR LEVEL	PRETEST	30	194.93	19.19	t=5.48 (P<0.05) Significant
	POST TEST	30	181.53	12.7	

The above table depicts that in the control group, the mean pretest fasting blood sugar level was 149.8 with standard deviation of 16.21 and the post test mean was 140.6 with standard deviation of 13.73 respectively. The obtained t-value is 5.68 (P<0.05) , which was statistically significant. With respect to post prandial blood sugar levels, the pretest mean was 194.93 with standard deviation of 19.19 and post test mean was 181.53 with standard deviation of 12.7 .The obtained t-value was 5.48 (P<0.05)which was statistically significant.

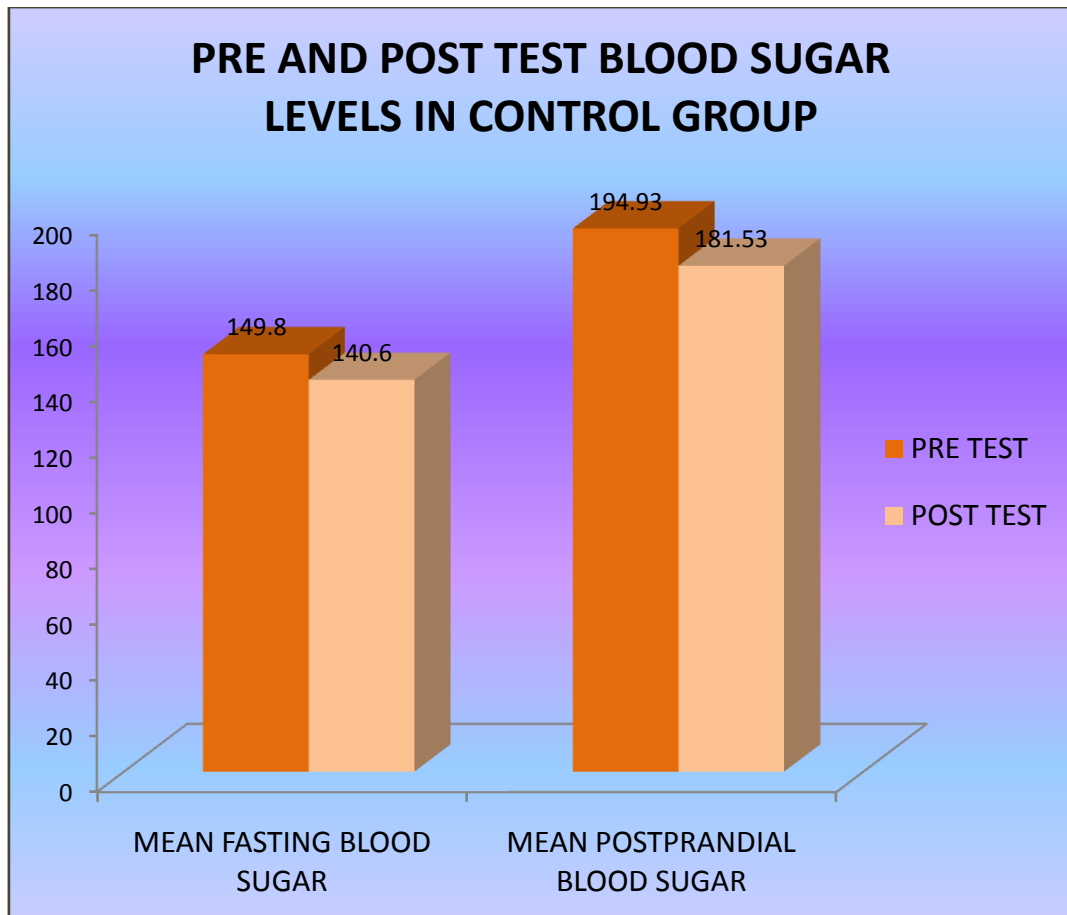


Fig.13. Distribution of mean pretest and post test blood sugar levels in control group

The above bar diagram shows that in the control group, the mean pre test fasting blood sugar level was 149.8 and the post test mean was 140.6. Also the mean post prandial blood sugar levels was 194.93 in the pretest and 181.53 in the post test respectively.

Table 8

Comparison of post test fasting blood sugar level between the experimental and control group

The frequency and percentage distribution of post test fasting blood sugar level for experimental and control group

Fasting blood sugar level in mgs%	POST TEST			
	Experimental group		Control group	
	n	%	n	%
80 – 120	19	63.33%	4	13.33%
121 – 160	11	36.67%	24	80%
161 – 200	0	0%	2	6.67%
Total	30	100.0%	30	100.0%

The above table depicts that in the **post test**, among the experimental group 63.33% of the type II diabetes mellitus subjects were in the range of 80-120 mg of fasting blood sugar, 36.67% were in the range of 121- 160mg of fasting blood sugar level.

Among the control group , 13.33% of the type II diabetes mellitus subjects were in the range of 80-120 mg, 80% were in the range of 121- 160 mg of fasting blood sugar level and 6.67% of them were in the range of 161-200 mg of fasting blood sugar level.

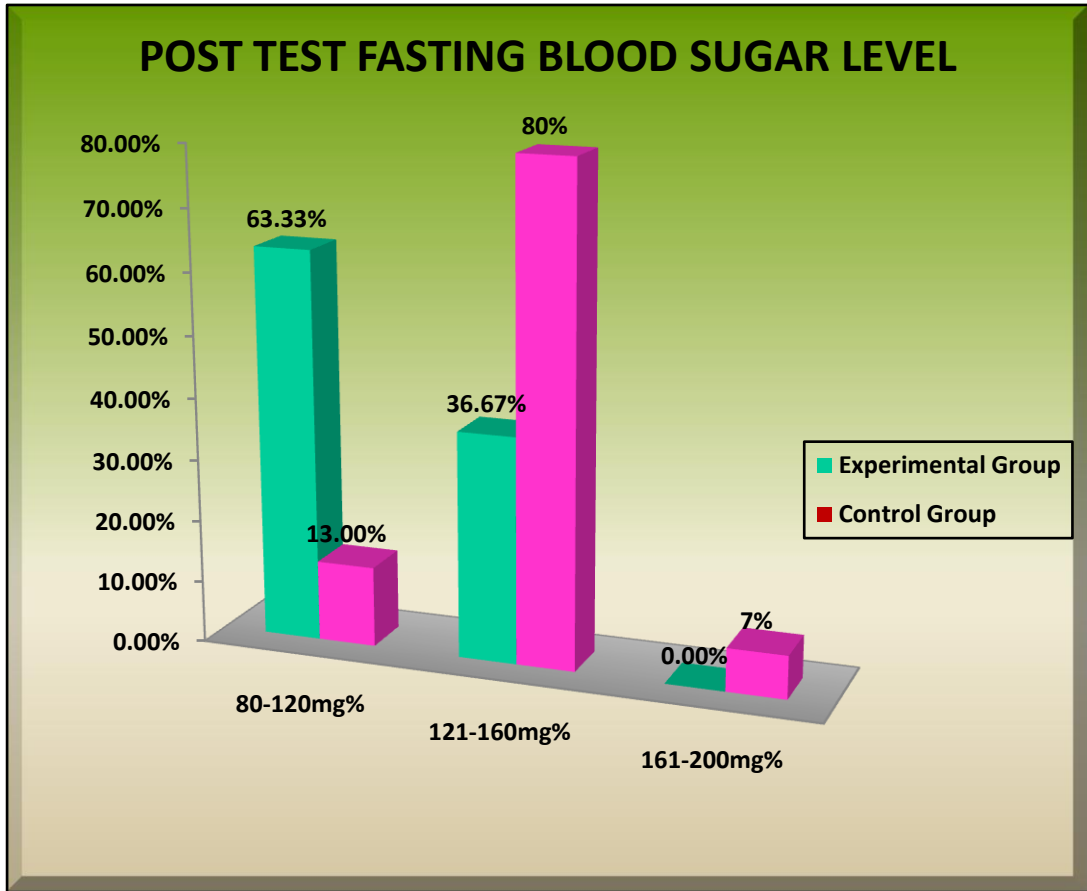


Fig.14. Percentage distribution of post test fasting blood sugar level among experimental and control group

The above bar diagram shows that in the post test, among the experimental group 63.33% of the type II diabetes mellitus subjects were in the range of 80-120 mg of fasting blood sugar, 36.67% were in the range of 121- 160mg of fasting blood sugar level. Among the control group, 13% subjects were in the range of 80-120 mg, 80% were in the range of 121- 160 mg of fasting blood sugar level and 7% of them were in the range of 161-200 mg respectively.

Table 9

Comparison of post test post prandial blood sugar level between the experimental and control group

The frequency and percentage distribution of post test postprandial blood sugar level for experimental and control group

Postprandial blood sugar level in mgs%	POST TEST			
	Experimental group		Control group	
	n	%	n	%
<140	13	43.33%	0	0%
141 – 180	17	56.67%	13	43.33%
181 – 220	0	0%	17	56.67%
>220	0	0%	0	0%
Total	30	100.0%	30	100.0%

The above table depicts that in the post test, among the experimental group ,about 43.33% were in the range <140 mg of post prandial blood sugar and 56.67% of the type II diabetes mellitus subjects were in the range of 141- 180mg of post prandial blood sugar level.

Among the control group , 43.33% of the type II diabetes mellitus subjects were in the range of 141- 180 mg of post prandial blood sugar level and 56.67% of them were in the range of 181-220 mg of post prandial blood sugar level.

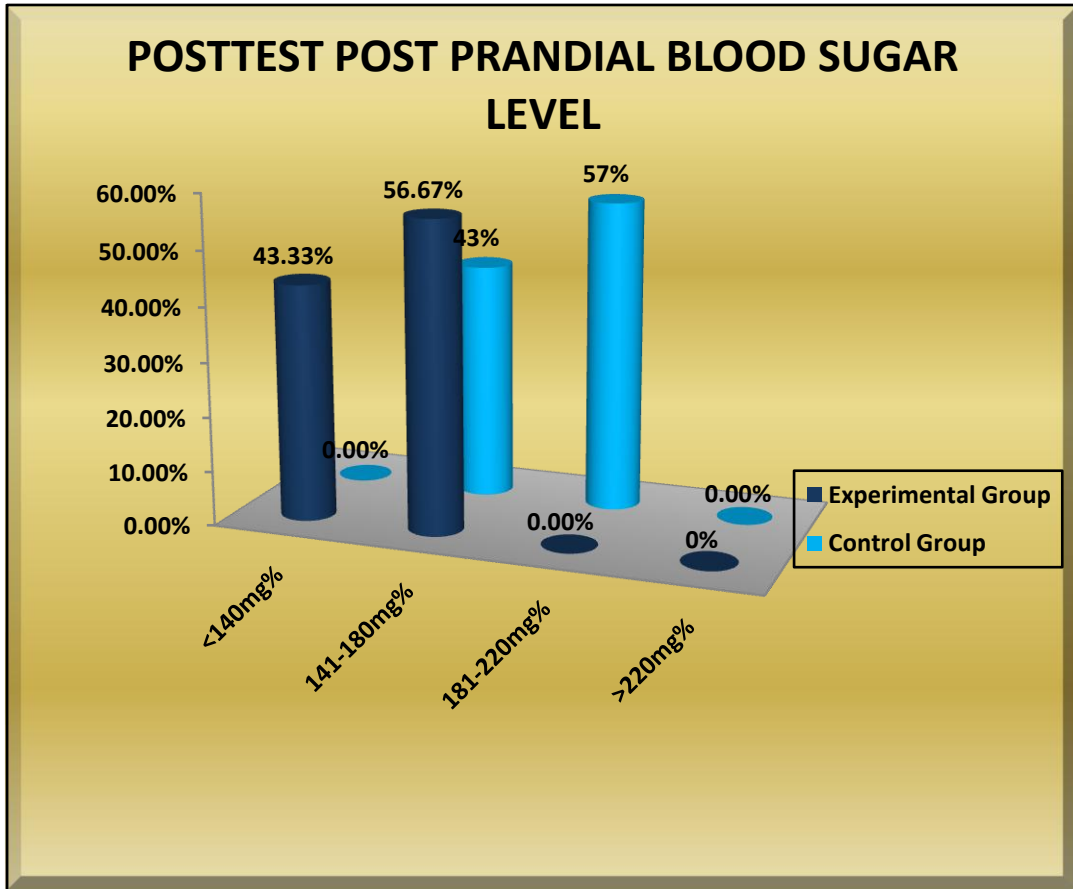


Fig.15. Percentage distribution of post test post prandial blood sugar level among experimental and control group

The above cylindrical diagram shows that in the post test, among the experimental group ,about 43.33% were in the range <140 mg of post prandial blood sugar and 56.67% of the type II diabetes mellitus subjects were in the range of 141-180mg of post prandial blood sugar level. Among the control group , 43% of the type II diabetes mellitus subjects were in the range of 141- 180 mg and 57% of them were in the range of 181-220 mg of post prandial blood sugar level.

Table 10

The mean, SD, and 't' value of post test blood sugar level between experimental group and control group

BLOOD SUGAR	GROUP	N	MEAN	SD	t VALUE
FASTING BLOOD SUGAR LEVEL	EXPERIMENTAL	30	116.8	6.3	t=8.68 (P<0.05) Significant
	CONTROL	30	140.6	13.73	
POSTPRANDIAL BLOOD SUGAR LEVEL	EXPERIMENTAL	30	146.67	12	t=10.08 (P<0.05) Significant
	CONTROL	30	181.53	12.7	

The above table describes the effectiveness of lady's finger juice among the experimental group by comparing the post test blood sugar levels with the control group. In the experimental group, the mean post test fasting blood sugar level was 116.8 with standard deviation 6.3 whereas in the control group the mean fasting level is 140.6 with standard deviation 13.73. The obtained t value using student independent t test 8.68 (P<0.05) was statistically significant.

Likewise, the post test mean postprandial blood sugar level of experimental group was 146.67 with standard deviation 12 and in control group it was 181.53 with standard deviation 12.7 respectively. The obtained t value was 10.08 (P<0.05) was statistically significant.

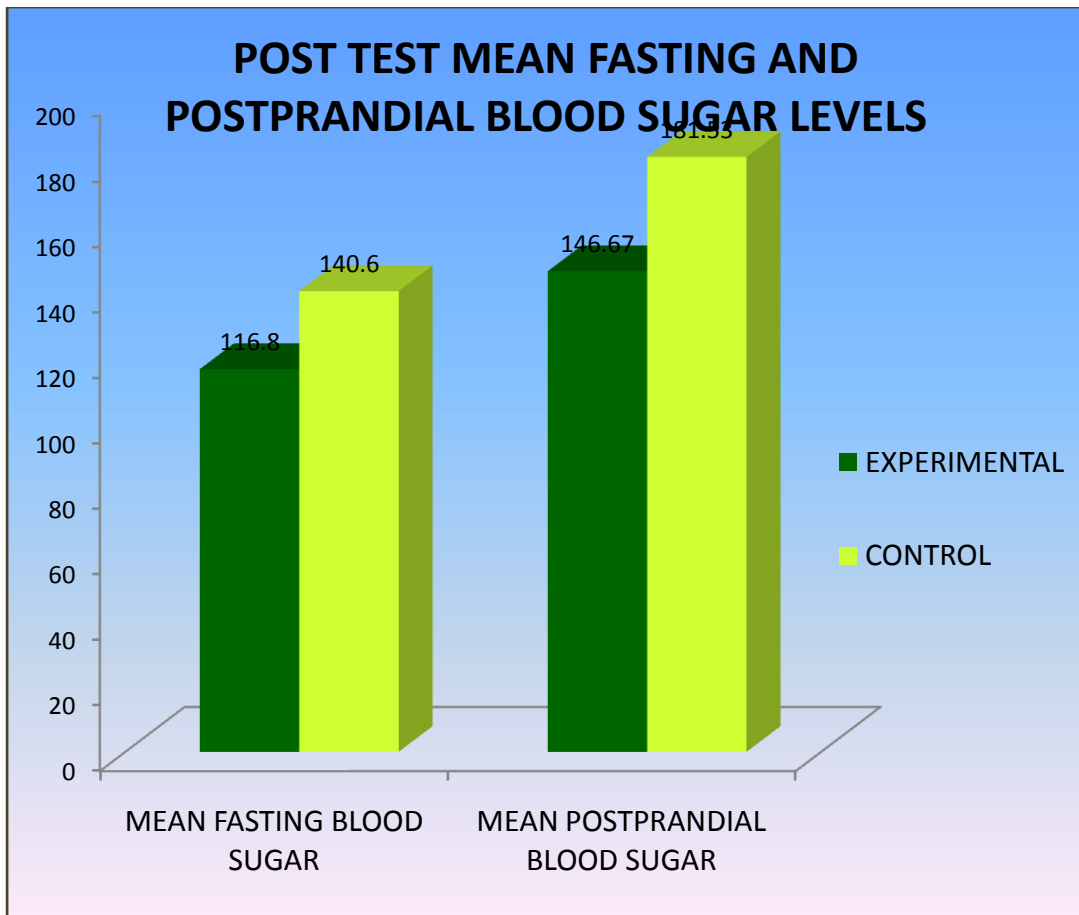


Fig.16. Distribution of mean post test blood sugar levels among experimental and control group

The above bar diagram shows that in the experimental group, the mean post test fasting blood sugar level was 116.8 whereas in the control group the mean fasting level was 140.6. Likewise, the post test mean postprandial blood sugar level of experimental group was 146.67 and in control group it was 181.53 respectively.

SECTION: D

ASSOCIATION OF POST TEST BLOOD SUGAR LEVELS WITH SELECTED DEMOGRAPHIC AND CLINICAL VARIABLES IN THE EXPERIMENTAL GROUP

Table 11

Association between fasting blood sugar level and selected demographic and clinical variables (experimental group)

BASELINE VARIABLES		BLOOD SUGAR LEVEL REDUCTION						One way ANOVA/ F-test
		Pretest		Posttest		Reduction		
		Mean	SD	Mean	SD	Mean	SD	
Age	40 - 45 yrs	138	6.78	117	5.47	21	3.21	F=10.78 P=0.01 Significant
	46 - 50 yrs	149.63	15.42	116.13	6.32	33.5	10.43	
	51 - 55 yrs	154.29	19.48	116.71	7.13	37.58	13.91	
	56 – 60yrs	140	7.21	120	7.21	20	1.32	
Occupation	Sedentary	148	21.21	118.5	6.36	29.5	16.76	F=11.32 P=0.01 Significant
	Moderate	143.28	13.09	116	8.1	27.28	6.67	
	Heavy	148.55	14.99	117.33	6.38	31.22	8.99	
	Unemployed	147.81	15.04	115.63	5.14	32.18	11.32	
Food Habit	Vegetarian	150.07	14.3	114.29	5.86	35.71	11.34	F=11.78 P=0.03 Significant
	Non veg	146.56	16.81	118.94	5.94	27.62	13.78	
Body mass Index	<18.50	147.00	5.65	113.00	7.07	34	3.04	F=10.67 P=0.02 Significant
	18.50-24.99	150.36	16.83	111.54	4.84	38.82	13.41	
	25-30	147.37	16.32	119.35	6.32	28.02	11.12	

The above table shows the association between fasting blood sugar level reduction score and their demographic and clinical variables for the experimental group. Statistical significance calculated using one way ANOVA F-test. Age (F= 10.78 , P= 0.01), Occupation (F= 11.32 , P=0.01) , Food habit (F= 11.78 , P= 0.03) , and Body Mass Index (F=10.67 , P= 0.02) were significantly associated at 0.05 level of significance with fasting blood sugar level. Apart from this other variables were not significantly associated.

Table 12

Association between post prandial blood sugar level and selected demographic and clinical variables (experimental group)

BASELINE VARIABLES		BLOOD SUGAR LEVEL REDUCTION						One way ANOVA/ F-test
		Pretest		Posttest		Reduction		
		Mean	SD	Mean	SD	Mean	SD	
Age	40 - 45 yrs	200.75	6.19	140.25	12.12	60.5	7.32	F=10.15 P=0.01 Significant
	46 - 50 yrs	195.19	15.04	145.44	11.27	49.75	4.71	
	51 - 55 yrs	203.29	17.87	153.71	13.9	49.58	4.03	
	56 – 60yrs	194.33	27.57	145.33	8.02	49	19.36	
Occupation	Sedentary	198	21.21	143.5	6.71	54.5	17.67	F=11.64 P=0.01 Significant
	Moderate	186.71	14.34	144.42	14.62	41.58	1.24	
	Heavy	204.1	11.91	143	12.12	61.1	7.32	
	Unemployed	198.18	17.58	151.09	11.35	47.09	7.66	
Exercise	Regular	197.71	12.05	142.42	10.21	55.29	8.61	F=9.83 P=0.02 Significant
	Irregular	194	23.05	157.5	13.07	36.5	10.93	
	Not doing	198.52	16.33	145.94	11.63	52.58	5.8	

The above table shows the association between Post prandial blood sugar level reduction score and their demographic and clinical variables for the experimental group. Statistical significance calculated using One way ANOVA F-test Age (F=10.15 , P= 0.01), Occupation (F= 11.64 , P= 0.01) , and Exercise (F= 9.83 , P= 0.02) were significantly associated at 0.05 level of significance with post prandial blood sugar level. Apart from this other variables were not significantly associated.

CHAPTER - V

DISCUSSION

The focus of this study is to assess the effectiveness of Lady's Finger Juice On Blood Sugar level among type 2 Diabetes Mellitus Clients At Samayanallur, Madurai.

The researcher adopted quasi experimental non equivalent control group pretest-post test design which had manipulation, and control group. 60 subjects were selected for this study from selected streets at samayanallur. A structured interview schedule was used to collect the baseline data.

An instrument Glucometer was used to assess the blood sugar level. In order to maintain the homogeneity among the groups the investigator selected the subjects with same type of medications.

This Research Study has been discussed based on the objectives and the following supported studies.

BASELINE CHARACTERISTICS OF EXPERIMENTAL AND CONTROL GROUP

Demographic variables:

The present study shows that in the experimental group about (53.34%) were in the age group 46-50 years, (23.33%) belonged to the age group 51-55 years whereas in the control group (40%) were between 46-50 years, (30%) belonged to 51-55 years age.

This study is consistent with **Saja, F.Ghannam. et.al. (2010)**, performed a retrospective study, Medical laboratory sciences, Rafedia & al watani, Hospital,

Nablus to study the relationship between diabetic mellitus and age among 83 samples. The blood sugar level was obtained from each sample and the findings were the majority of diabetic cases increases in the age above 40 years.

Majority of subjects were males both in the experimental (56.57%) and control group (53.33%). In the experimental group, about (23.33%) were up to the level of primary education, (30%) had middle education and (33.33%) had no formal education whereas in the control group, majority of them (36.67%) had no formal education .

In the experimental group, (30%) had heavy work and (36.67%) were unemployed. In control group about (43.34%) had heavy work. When marital status is considered, in both the experimental and control group (100%) were married. In the experimental group, about (43.34%) belonged to nuclear family, (50%) belonged to joint family whereas in the control group, (60%) belonged to joint family. In the experimental group (46.67%) had less than Rs.3000 per month whereas in the control group, about (43.33%) had Rs.3001-6000 of family income respectively. In the experimental group, (20%) had maternal grandparent with diabetes mellitus, and (56.66%) was not applicable. Whereas in the control group, (23.33%) had mother with diabetes mellitus and (63.34%) was not applicable. Both in the experimental group (53.33%) and the control group (63.33%), majority were mixed vegetarians.

Clinical variables:

In the experimental group, majority (63.34%) had illness and treatment between 1-3 years whereas in the control group (46.67%) had illness and treatment between 1-3 years, and (46.67%) had illness and treatment between 3-5 years. Majority (90%) in the experimental group and (96.67%) in the control group had

regular drug compliance. With the view of medication taken, both in the experimental group and the control group majority had allopathy medications. When sleeping hours is considered, in the experimental group about (43.33%) had 8 hours of sleep per day and in the control group, (60%) had sleep less than 8 hours per day. With regards to exercise, majority (63.33%) in the experimental group and (53.33%) in the control group did not do exercise. Majority in the experimental group (90%) in experimental group and (96.67%) in control group did not practice yoga.

With regards to body mass index, in the experimental group, (53.33%) had between 25-30 and in the control group, (56.67%) had between 18.50-24.99 respectively. Majority in the experimental group (76.67%) and in the control group (70%) consumes diabetic diet. With the view of sweet intake and roots and tuber intake, in the experimental group, (76.67%) fully restricts sweet intake and roots and tubers intake, whereas in the control group, about (70%) fully restricts sweet intake and roots and tubers intake.

FINDINGS BASED ON THE OBJECTIVES:

The first objective was to assess the blood sugar level among type 2 diabetes mellitus clients in the experimental and control group.

In the pre test, among the experimental group 80% of the type II diabetes mellitus subjects were in the range of 121- 160mg of fasting blood sugar level and 20% of them were in the range of 161-200 mg blood sugar level. Among the control group , 70% of the type II diabetes mellitus subjects were in the range of 121- 160 mg of fasting blood sugar level and 30% of them were in the range of 161-200 mg of fasting blood sugar level.

In the pre test, among the experimental group 13.33% of the type II diabetes mellitus subjects were in the range of 141- 180mg of post prandial blood sugar level and 80% of them were in the range of 181-220 mg blood sugar level and 6.67% of subjects had more than 220mg.. Among the control group , 26.67% of the type II diabetes mellitus subjects were in the range of 141- 180 mg of post prandial blood sugar level and 60% of them were in the range of 181-220 mg and 13.33% were in the range of >220mg/dl of post prandial blood sugar level.

The mean pretest fasting blood sugar level among the experimental group was 148.2 with standard deviation of 15.5 and in the control group, the mean fasting blood sugar level was 149.8 with standard deviation of 16.21. The mean pretest post prandial blood sugar level among the experimental group was 197.73 with standard deviation of 15.9 and in the control group; the mean post prandial blood sugar level was 194.93 with standard deviation of 19.19.

The second objective of this study was to evaluate the effectiveness of lady's finger juice on blood sugar level among type 2 diabetes mellitus clients in the experimental group.

Among the experimental group, the mean pretest fasting blood sugar level was 148.2 with standard deviation of 15.5 and the post test mean was 116.8 with standard deviation of 6.3 respectively. The test of significance was calculated using paired t-test .The obtained t-value is 10.26 ($P < 0.05$), which was statistically significant.

With respect to post prandial blood sugar levels, the pretest mean was 197.73 with standard deviation of 15.9 and post test mean was 146.67 with standard deviation of 12 .The obtained t-value was 14.4 ($P < 0.05$)which was statistically significant.

The findings confirm that there was a significant difference between pre test and post test fasting and postprandial blood sugar levels among the experimental group.

The present study was consistent with the study conducted by **Ravindra, J. et al., (2011)** conducted an experimental study on Ant diabetic activity of *abelmoschus esculentus* fruit extract to identify the anti diabetic activity of *abelmoschus esculentus* (ladies finger) fruit extract at Gujarat Haboolia diabetic centre. The fruits of *Abelmoschus Esculentus* were chopped and soaked in water for 6 hrs and squeezed so that the mucilage enters the water this extract is further used to observe its anti diabetic activity by consuming the extract in empty stomach for three weeks. The pretest-posttest difference in fasting glucose levels were 46mg/dl (pretest mean 168mg/dl and post test mean was 122mg/dl) and post prandial glucose levels were 53mg/dl (pretest mean 191mg/dl and post test mean was 138mg/dl) respectively. The study showed that lady's finger juice has control on blood glucose levels among type 2 Diabetes mellitus clients.

The study was also consistent with **Alegbejo, J.O. (2011)** conducted an experimental study on Effect of *Abelmoschus esculentus* L juice in control of blood sugar among type 2 Diabetes mellitus clients. 40 samples aged 40-60 years in selected areas of Vietnam were selected through purposive sampling method with inclusion criteria. An *Abelmoschus esculentus* L was soaked overnight and the water (150 ml) was given to the clients every day morning in empty stomach for 30 days .The pre and post test mean blood sugar levels were compared. The study showed that there is significant difference between the pre test (mean fasting level=174.93 and mean postprandial=240.45) and post test (mean fasting level=115.17 and mean post

prandial=131.30) blood sugar levels ($t=7.16$ at 0.05 level) for fasting blood sugar and ($t=11.38$ at 0.05 level) for postprandial blood sugar respectively.

In the **post test**, among the experimental group 63.33% of the type II diabetes mellitus subjects were in the range of 80-120 mg of fasting blood sugar, 36.67% were in the range of 121- 160mg of fasting blood sugar level. Among the control group, 13.33% of the type II diabetes mellitus subjects were in the range of 80-120 mg, 80% were in the range of 121- 160 mg of fasting blood sugar level and 6.67% of them were in the range of 161-200 mg of fasting blood sugar level.

In the post test, among the experimental group, about 43.33% were in the range <140 mg of post prandial blood sugar and 56.67% of the type II diabetes mellitus subjects were in the range of 141- 180mg of post prandial blood sugar level. Among the control group, 43.33% of the type II diabetes mellitus subjects were in the range of 141- 180 mg and 56.67% of them were in the range of 181-220 mg of post prandial blood sugar level.

In the experimental group, the mean post test fasting blood sugar level was 116.8 with standard deviation 6.3 whereas in the control group the mean fasting level is 140.6 with standard deviation 13.73. The obtained t value 8.68 ($P<0.05$) was statistically significant. Likewise, the post test mean postprandial blood sugar level of experimental group was 146.67 with standard deviation 12 and in control group it was 181.53 with standard deviation 12.7 respectively. The obtained t value 10.08 ($P<0.05$) was statistically significant.

The findings of the study shows that there was a significant difference between the post test fasting and post prandial blood sugar levels among the

experimental and control group which confirms the effectiveness of lady's finger juice on blood sugar among type 2 Diabetes mellitus clients.

The study was consistent with the study conducted by **Bhadia Sharma. (2011)** conducted a quasi experimental study to evaluate the effect of okra juice on type II diabetes mellitus at selected villages of Iraq. Twenty five clients with type 2 diabetes mellitus (fasting glucose >120 mg/dl) were divided into two groups. Group 1 (n=12) received the okra juice 200 ml/day and the group 2 (n=13) received routine diet. Medications and dietary control was maintained for both the groups. At the end of one month fasting and post prandial glucose was assessed and compared with pretest values ($P < 0.001$) The group 1 has significantly lower mean fasting and postprandial level than group 2. ($P < 0.001$) The results showed that there is a significant reduction in mean fasting and postprandial levels. The study concludes that there is effect of okra extract on blood sugar among type 2 Diabetes mellitus.

Thus, H₁: There will be significant difference between the blood sugar level before and after the intake of lady's finger juice in the experimental group was accepted.

The third objective of this study was to determine the association of post test blood sugar levels with selected demographic and clinical variables in the experimental group.

In the experimental group, statistical significance calculated using One way ANOVA F-test to determine the association of blood sugar levels with selected demographic and clinical variables shows that Age ($F= 10.78$, $P= 0.01$), Occupation ($F= 11.32$, $P=0.01$) , Food habit ($F= 11.78$, $P= 0.03$) , and Body Mass Index ($F=10.67$, $P= 0.02$) were significantly associated at 0.05 level of significance with

fasting blood sugar level. Also Age ($F=10.15$, $P= 0.01$), Occupation ($F= 11.64$, $P= 0.01$), and Exercise ($F= 9.83$, $P= 0.02$) were significantly associated at 0.05 level of significance with post prandial blood sugar level.

The present study was consistent with a retrospective study done by **Chris, E. Ekpenyong.et al., (2010)** on Gender And Age Specific Prevalence And Associated Risk Factors Of Type 2 Diabetes Mellitus In Uyo Metropolis, South Eastern Nigeria to determine the age and sex specific prevalence of type 2 diabetes mellitus in South Eastern Nigeria. The study population consisted of 3500 civil servants, 1532 (43.8%) male and 1968 (56.2%) female, age range 18-60 years. They were randomly selected and studied between October 2010 and November 2012. The results showed that the glycemic level were high above age 40 years both in males and females. The study showed that Age, poor dietary habits, high adiposity indices, physical inactivity, positive family history and educational status were significantly associated with T2DM in both sexes ($P<0.05$).

Thus, H₂: There will be significant association of the post test blood sugar levels with their selected demographic and clinical variables in the experimental group. was accepted.

CHAPTER – VI

SUMMARY, CONCLUSION, IMPLICATIONS,

RECOMMENDATIONS

This chapter deals with the summary of the study and conclusions drawn. It also clarifies the implications for different areas like nursing practice, nursing education, nursing research, nursing administrations and recommendations for further research.

6.1 SUMMARY OF THE STUDY

Diabetes mellitus is chronic multisystem disease related to abnormal insulin production, impaired insulin utilization, or both. Type 2 diabetes mellitus is defined as a heterogeneous disorder involving both genetic and environmental factors and it previously called non-insulin dependent diabetes mellitus or adult-onset diabetes. Complementary therapies can help to restore the body's natural equilibrium and balance and when the body is relaxed and in balance it can cope with the everyday stresses and strains of life much more effectively. Consumption of the indigenous plant materials are in use for the management of diabetic mellitus. Lady's finger is considered one of the most popular complementary therapies for type 2 diabetic mellitus. The mucilage and superior fibre found in lady's finger is believed to stabilize blood sugar as it curbs the rate at which sugar is absorbed from the intestinal tract.

The investigator conducted a study to evaluate the effectiveness of Lady's Finger Juice On Blood Sugar level among type 2 Diabetes Mellitus Clients At Samayanallur, Madurai.

The objectives of the study were,

- To assess the blood sugar level among type 2 diabetes mellitus clients in the experimental and control group.
- To evaluate the effectiveness of lady's finger juice on blood sugar level among type 2 diabetes mellitus clients in the experimental group.
- To determine the association of post test blood sugar levels with their selected demographic and clinical variables in the experimental group.

The following hypotheses were tested:

H₁: There will be significant difference between the blood sugar level before and after the intake of lady's finger juice in the experimental group.

H₂: There will be significant association of post test blood sugar levels with selected demographic and clinical variables in the experimental group.

The setting of the study was Samayanallur, Madurai. The research approach used in the study was a quantitative approach and design was quasi experimental non equivalent control group pretest post test design. The sampling technique was non probability purposive sampling technique. The total sample size was 60; among that 30 were in experimental group, 30 were in control group.

Structured Interview questionnaire was used to collect baseline data and glucometer was used to assess the blood sugar level. The content validity and reliability was obtained prior from the study. Subsequently, a pilot study was conducted and it found that, the tool was feasible and practicable. A modified Widenbach's prescriptive theory (1969) was formulated which provided a useful

means in assessing the reduction of blood sugar level among the type 2 diabetes mellitus clients.

The data collection was done for a period of four weeks from 1.10.2013 to 30.10.13. After getting informed consent from clients, On the day 1, fasting and postprandial blood sugar was assessed using glucometer. Lady's finger juice was given to the experimental group. Lady's finger juice was prepared by one medium sized lady's finger (approximately 10 cm) slit into 2 halves vertically and soaked in 150 ml of water overnight. The juice was given to the diabetic clients in the experimental group (after discarding the lady's finger) the next morning 30 minutes before breakfast daily from day 2 for 30 days. On day 31, post test blood sugar was assessed for both the experimental and control group. The data were analyzed by descriptive and inferential statistics.

MAJOR FINDINGS OF THE STUDY:

- Majority about (53.34%) in the experimental group belonged to the age group 46-50 years, whereas in the control group (40%) was between 46-50 years.
- Majority of subjects were males both in the experimental group (56.567%) and control group (53.33%).
- Majority in the experimental group, about (33.33%) and in the control group (36.67%) had no formal education. In the experimental group majority (46.67%) had less than Rs.3000 per month, whereas in control group, (43.33%) had Rs.3001-6000 of family income respectively.
- In the experimental group, (20%) had maternal grandparent with diabetes mellitus, and (56.66%) was not applicable. Whereas in the control group, (23.33%) had mother with diabetes mellitus and (63.34%) was not applicable.

- Both in the experimental group (53.33%) and the control group (63.33%), majority were mixed vegetarians.
- In the experimental group, majority (63.34%) had illness and treatment between 1-3 years whereas in the control group (46.67%) had illness and treatment between 1-3 years, and (46.67%) had illness and treatment between 3-5 years.
- Majority (90%) in the experimental group and (96.67%) in the control group had regular drug compliance. With the view of medication taken, majority in both the experimental group (93.33%) and in the control group,(96.67%) had allopathy medications.
- When sleeping hours is considered, in the experimental group about (43.33%) had 8 hours of sleep and in the control group, (60%) had sleep less than 8 hours per day.
- With regards to exercise, majority (63.33%) in the experimental group and (53.33%) in the control group did not do exercise. Majority in the experimental group (90%) in experimental group and (96.67%) in control group did not practice yoga.
- In the experimental group, (53.33%) had body mass index between 25-30 and in the control group, about (56.67%) had between 18.50-24.99 respectively.
- Majority in the experimental group (76.67%) practice diabetic diet. In the control group, about (70%) consumes diabetic diet.
- With the view of sweet intake and roots and tuber intake, both in the experimental group, (76.67%) and in the control group (70%) fully restricts sweet intake and roots and tubers intake.

- In the pre test, majority among the experimental group (80%) and the control group (70%) of the type II diabetes mellitus subjects were in the range of 121-160mg of fasting blood sugar level and 20% in experimental group and 30% in control group were in the range of 161-200 mg blood sugar level.
- Among the experimental group 13.33% and control group 26.67% of the type II diabetes mellitus subjects were in the range of 141- 180mg of post prandial blood sugar level and 80% in experimental group ,60% in the control group were in the range of 181-220 mg blood sugar level
- The mean pretest blood sugar level among the experimental group fasting (148.2 with standard deviation of 15.5) and postprandial (197.73 with standard deviation of 15.9) and in the control group, fasting (149.8 with standard deviation of 16.21) and postprandial (194.93 with standard deviation of 19.19) respectively.
- In the experimental group, the mean pretest fasting blood sugar level was 148.2 and the post test mean was 116.8. The t value was 10.26 ($P < 0.05$), which was statistically significant. With respect to post prandial blood sugar levels, the pretest mean was 197.73 and post test mean was 146.67. The obtained t-value was 14.4 ($P < 0.05$) which was statistically significant.
- In the post test, majority among the experimental group 63.33% were in the range of 80-120 mg of fasting blood sugar and <140 range of post prandial blood sugar whereas among the control group majority 80% were in the range of 121- 160 mg of fasting blood sugar and 56.67% were in the range of 141-180mg of post prandial blood sugar level.
- In the experimental group, the mean post test fasting blood sugar level was 116.8 and whereas in the control group the mean fasting level was 140.6. The

obtained t value 8.68 ($P < 0.05$) was statistically significant. Likewise, the post test mean postprandial blood sugar level of experimental group was 146.67 and in control group it was 181.53 respectively with t value of 10.08 ($P < 0.05$) was statistically significant.

- There was a significant association of Age, Occupation, Food habit and Body Mass Index with fasting blood sugar level and Age, Occupation and Exercise with post prandial blood sugar level.

6.2 CONCLUSION

The statistical analysis of the study shows that there was decrease in the blood sugar level after consumption of lady's finger juice among type 2 diabetes mellitus clients when compared with the pretest. Also there was a difference in blood sugar level among experimental and the control group. Thus this study proved the effectiveness of lady's finger juice on the blood sugar level among type 2 diabetes mellitus clients. In community settings, as the lady's finger juice is easily available and cheaper, this can be followed by type 2 diabetes mellitus clients.

6.3 IMPLICATIONS OF THE STUDY

The study has implications in nursing practice, nursing education, nursing research and nursing administration.

6.3.1 NURSING PRACTICE:

- Nurses play an important role in caring the client with diabetes mellitus. The incidence and prevalence of diabetes mellitus and its complications are increasing every year. Thus, there is an urgent need to concentrate on preventive measures to reduce the disease burden.

- It is well known fact that the diabetes mellitus can be controlled and its complications can be prevented through various life style modifications such as weight reduction measures, dietary modifications and increased physical activity.
- The findings of the study have shown that lady's finger juice can be consumed by type 2 diabetes mellitus clients to control the blood sugar level.
- The nursing personnel should plan appropriately in conducting awareness programmes, mass media campaigns in order to educate the public regarding the importance of lady's finger juice in the control of diabetes mellitus and prevention of its complications.

6.3.2 NURSING EDUCATION:

- As Nurse Educators, we must strengthen the non-pharmacological methods of managing diabetes mellitus and should be incorporated in nursing subjects.
- Nurse education should emphasize on preparing nurses to various treatment modalities and update their knowledge in all fields.
- The study will enhance the nursing students to acquire knowledge about lady's finger juice and its importance in maintaining the blood sugar level.

6.3.3 NURSING RESEARCH:

- This study can be a baseline for future studies to build upon and motivate the investigators to conduct further studies.
- A study can be conducted with large samples.
- Nurses should conduct periodic research and disseminate the findings through publications, conferences and seminars.

- As Nursing profession focuses on evidence based practice, the nursing personnel should involve in research activities to come out with successful remedies to reduce the burden of various diseases.

6.3.4 NURSING ADMINISTRATION:

- As Nurse Administrator, we must take initiation in formulating policies on various aspects of care.
- Nurse administrators should organize various staff development programmes and in service education to educate the nurses on importance of lady's finger juice as adjunct to medications of diabetes mellitus.
- Nurse administrators should motivate the nurses to gain knowledge regarding non pharmacological management of diabetes mellitus and implement them while caring the clients.

6.4 RECOMMENDATIONS

The study recommends the following further research

- ❖ The study can be conducted with large samples to generalize the findings.
- ❖ Comparative studies can be conducted between various alternative modalities.
- ❖ The study can be conducted in different settings.

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APPENDIX I

INTERVIEW SCHEDULE ON BLOOD SUGAR AMONG TYPE 2 DIABETES MELLITUS CLIENTS

SECTION A

DEMOGRAPHIC DATA

INSTRUCTION:

The following sections seek information about you and diabetes .There is no right or wrong response. Kindly read the following and please tick (✓) mark against the correct answer. The information you share will be kept confidential.

1. Age in years _____

2. Sex
 - c) Male
 - d) Female

3. Education
 - a) Primary education
 - b) Middle education
 - c) Higher secondary
 - d) Graduate
 - e) No formal education

4. Occupation
 - e) Sedentary
 - f) Moderate
 - g) Heavy
 - h) Unemployed

5. Marital status

- d) Married
- e) Single
- f) Divorced

6. Type of family

- d) Nuclear
- e) Joint
- f) Separated

7. Family Income per month

- e) Less than Rs.3000
- f) Rs.3001-6000
- g) Rs.6001-9000
- h) More than Rs.9000

8. Family history of Diabetes mellitus

- f) Father
- g) Mother
- h) Paternal grandparent
- i) Maternal grandparent
- j) Not applicable

9. Food habit

- c) Vegetarian
- d) Mixed vegetarian

SECTION B
CLINICAL VARIABLES

1. Duration of Illness

- d) Less than one year
- e) 1-3 years
- f) 3-5 years

2. Duration of treatment

- d) Less than one year
- e) 1-3 years
- f) 3-5 years

3. Drug compliance

- c) Regular
- d) Irregular

4. Specify the medication taken

- e) Allopathy
- f) Homeopathy
- g) Siddha
- h) Naturopathy

5. Sleeping hours

- d) Less than 8 hours
- e) 8 hours
- f) More than 8 hours

6. Exercise

- d) Regular
- e) Irregular
- f) Not doing

7. Practice of Yoga

- d) Regular
- e) Irregular
- f) Not doing

8. Body mass Index

- e) Less than 18.50
- f) 18.50-24.99
- g) 25-30
- h) More than 30

9. Practice of Diabetic diet

- c) Yes
- d) No

10. How strict are you restricting sweet intake

- d) Fully restricted
- e) Sometimes I eat
- f) I take as I like

11. How strict are you restricting roots and tubers intake

- d) Fully restricted
- e) Sometimes I eat
- f) I take as I like

12. How often do you check your blood glucose status

- e) Once in a month
- f) Once in 3 months
- g) Once in 6 months
- h) Only when needed

SECTION C

BIOPHYSIOLOGICAL MEASUREMENTS

S.NO	BLOOD SUGAR	PRETEST		POST TEST	
		Experimental Group	Control Group	Experimental Group	Control Group
1.	Fasting Blood Sugar				
2.	Postprandial Blood Sugar				

QUESTIONNAIRE-TAMIL VERSION

நேர்முகக் காணல் படிவம்

கீழே கொடுக்கப்பட்டுள்ள பகுதியில் உங்களை பற்றியும், நீரிழிவு நோயைப் பற்றியும், கேள்விகள் உள்ளது. பொருத்தமான விடையை (✓) குறிப்பிடவும் நீங்கள் அளிக்கும் எல்லா விபரங்களும் ரகசியமாக பாதுகாக்கப்படும்

பிரிவு –அ

தனிவிபரப்பட்டியல்

1. வயது _____

2. பாலினம்

அ) ஆண்

ஆ) பெண்

3. படிப்பு

அ) ஆரம்ப நிலைக்கல்வி

ஆ) நடுநிலைக் கல்வி

இ) உயர்நிலைக் கல்வி

ஈ) பட்டப்படிப்பு

உ) படிக்கவில்லை

4. வேலை

அ) உட்கார்ந்த நிலை வேலை

ஆ) மிதமான வேலை

இ) கடினமான வேலை

ஈ) வேலை எதுவும் இல்லை

5. திருமண தகுதி

- அ) தனித்திருப்பவர்
- ஆ) திருமணமானவர்
- இ) விவாகரத்து ஆனவர்

6. குடும்ப வகை

- அ) தனிக்குடும்பம்
- ஆ) கூட்டுக் குடும்பம்
- இ) பிரிந்து வாழ்பவர்

7. குடும்பத்தின் மாத வருமானம்

- அ) ரூ.3000க்கு கீழ்
- ஆ) ரூ.3001 - ரூ6000 வரை
- இ) ரூ.6001 - ரூ9000 வரை
- ஈ) ரூ9000க்கு மேல்

8. நீரிழிவு நோய்க்கான குடும்ப வரலாறு

- அ) தந்தை
- ஆ) தாய்
- இ) தந்தை வழி முதியோர்கள்
- ஈ) தாய் வழி முதியோர்கள்
- உ) எதுவும் இல்லை

9. உணவு முறை

- அ) சைவம்
- ஆ) அசைவம்

பிரிவு -ஆ

1. நீரிழிவு நோய் எத்தனை வருடமாக இருக்கிறது?

அ) ஒரு வருடத்திற்கு கீழ்

ஆ) 1-3 வருடம்

இ) 3-5 வருடம்

2. நீரிழிவு நோய்க்காக எத்தனை வருடம் சிகிச்சை பெற்று வருகிறீர்கள்?

அ) ஒரு வருடத்திற்கு கீழ்

ஆ) 1-3 வருடம்

இ) 3-5 வருடம்

3. உங்கள் மருந்துகளை தவறாமல் எடுத்து கொள்கிறீர்களா?

அ) ஆம்

ஆ) இல்லை

4. நீங்கள் எந்த மருத்துவ முறையை பின்பற்றுகிறீர்கள்?

அ) ஆங்கில மருத்துவம்

ஆ) ஹோமியோபதி

இ) சித்த மருத்துவம்

ஈ) இயற்கை மருத்துவம்

5. தூங்கும் நேரம்

அ) 8 மணி நேரத்திற்கு கீழ்

ஆ) 8 மணி நேரம்

இ) 8 மணி நேரத்திற்கு மேல்

6. உடற்பயிற்சி மேற்கொள்ளுதல்

அ) எப்பொழுதும்

ஆ) எப்பொழுதாவது

இ) எப்பொழுதும் இல்லை

7.யோகா மேற்கொள்ளுதல்

அ) எப்பொழுதும்

ஆ) எப்பொழுதாவது

இ) எப்பொழுதும் இல்லை

8. உடல்எடை சரிவிகிதம்

அ) 18.50க்கு கீழ்

ஆ) 18.50 – 24.99

இ) 25 – 29.99

ஈ) 30க்கு மேல்

9. நீங்கள் நீரிழிவு நோய்க்கான உணவு முறையை உட்கொள்கிறீர்களா?

அ) ஆம்

ஆ) இல்லை

10.நீங்கள் எந்த அளவிற்கு இனிப்பு வகைகளை உங்கள் உணவில் தவிர்க்கிறீர்கள்?

அ) முற்றிலும் தவிர்க்கிறேன்

ஆ) சில சமயங்களில் சாப்பிடுகிறேன்

இ) நினைத்தபடி சாப்பிடுகிறேன்

11.நீங்கள் எந்த அளவிற்கு கிழங்கு மற்றும் தண்டு வகைகளை உங்கள்

உணவில் தவிர்க்கிறீர்கள்?

அ) முற்றிலும் தவிர்க்கிறேன்

ஆ) சில சமயங்களில் சாப்பிடுகிறேன்

இ) நினைத்தபடி சாப்பிடுகிறேன்

12.நீங்கள் உடலின் இரத்த சர்க்கரை அளவை எத்தனை நாட்களுக்கு ஒரு முறை சோதித்து பார்ப்பீர்கள்?

அ) மாதத்திற்கு ஒரு முறை

ஆ) 3 மாதத்திற்கு ஒரு முறை

இ) 6 மாதத்திற்கு ஒரு முறை

ஈ) தேவைப்பட்டால் மட்டும்

APPENDIX II

Ref. No. 9101/E4/3/2013

Govt Rajaji Hospital,
Madurai-20. Dated: 20.09.2013

Institutional Review Board I independent Ethics Committee,

Dr. N. Mohan, MS., F.L.C.S F.A.I.S.,

Dean, Madurai Medical College &

Govt Rajaji Hospital, Madurai 625020. **Convener.**

Sub: Establishment-Govt. Rajaji Hospital. Madurai-20-
Ethics committee-Meeting Minutes- for August 2013
Approved list -regarding.

The Ethics Committee meeting of the Govt. Rajaji Hospital, Madurai was held on 08.08,2013, Wednesday at 10.00 am to 12.00.pm at the Anesthesia Seminar Hall, Govt. Rajaji Hospital, Madurai. The following members of the committee have attended the meeting.

I Dr. V, Nagarajan, M.D., D.M (Neuro) Ph: 0452-2629629 Cell.No 9843052029	Professor of Neurology (Retired) D.No.72, Vakkil New Street, Simmakkal, Madurai -1	Chairman
2. Dr.Mohan Prasad. MS M.Ch Cell,No.9843050822 (Oncology)	Professor & H.O.D of Surgical Oncology(Retired) D.No.72, West Avani Moola Street. Madurai -1	Member Secretary
3. Dr. I. Jeyaraj, M.S... (Anatomy) Cell.No 9566211947	Director & Professor Institute of Anatomy /V,P Madurai Medical College	Member
4. Dr. Parameswari M.D (Pharmacology) Cell.No.9994026056	Director of Pharmacology Madurai Medical College Professor of Medicine Madurai Medical College	Member Member
5. Dr.S. Vadivel Murugan, MD., (Gen.Medicine) Cell.No 9566543048	Professor & H.O.D of Surgery i/c Madurai Medical College	Member
6. Dr.S. Meenakshi Sundaram, MS (Gen.Surgery) Cell.No 9842138031	50/5, Corporation Officer's quarters, Gandhi Museum Road, Thamukam, Madurai-20	Member
7. Miss, Mercy Immaculate Rubalatha, MA., Med., Cell. No. 9367792650	Advocate, D.No,72.Palam Station Road, Sellur, Madurai -2	Member
8. Thiru. .Pala. .Ramasamy , BA.,B.L.,Cell.No 9842165127	Businessman, 21 Jawahar Street. Gandhi Nagar, Madurai-20	Member
9. Thiru. P.K.M. Chelliah,B.A Cell.No 9894349599		Member

The following Projects were approved by the committee


S.No	Name of P.G	Course	Name of the Project	Remarks
1.	Sujitha.R	M.Sc Nursing, College of Nursing, Madurai Medical College	Effectiveness of lady's finger juice on blood sugar level among type 2 diabetes mellitus clients at Samayanallur, Madurai	Approved


Please note that the investigator should adhere the following: She / He should get a detailed informed consent from the patients/participants and maintain it confidentially.

- 1.She / he should carry out the work without detrimental to regular activities as well as without extra expenditure to the institution or to Government,
2. She/he should inform the institution Ethical Committee, in case of any change of study procedure, site and investigation or guide.
3. She / He should not deviate the area of the work for which applied for Ethical clearance, She / He should inform the JEC immediately, in case of any adverse events or Serious adverse reactions.
- 4, She / He should abide to the rules and regulations of the institution,
5. She / He should complete the work within the specific period and if any Extension of time is required He / She should apply for permission again and do the work,
6. She / He should submit the summary of the work to the Ethical Committee on Completion of the work.
7. She / He should not claim any funds from the institution while doing the work or on completion.
8. She / He should understand that the members of IEC have the right to monitor the work with prior intimation.


Member Secretary **Chairman**
Ethical Committee

To
The above Applicants
-thro. Head of the Department concerned


DEAN/Convenor
Govt. Rajaji Hospital,
Madurai- 20.


20/9/12

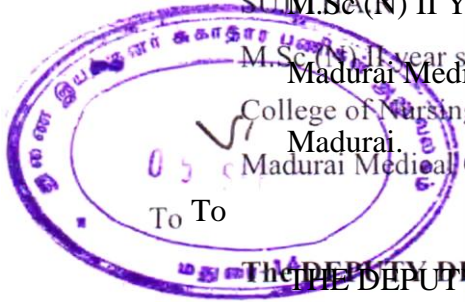
APPENDIX III

PERMISSION SEEKING LETTER

From

SUJITHA.R,

M.Sc(N) II Year student,
M.Sc(N) II year s
Madurai Medical College,
College of Nursing,
Madurai.
Madurai Medical



3882/12
4974
8/9/13

Permitted
M.

To To
The DEPUTY DIRECTOR OF HEALTH SERVICES,

Viswanathapuram,

Madurai.

DEPUTY DIRECTOR OF
HEALTH SERVICES
MADURAI.

Through: The proper Channel

Respected Sir,

Sub : College of Nursing, Madurai Medical College, Madurai — M.Sc (N) II year Community health Nursing Student — Permission for conducting study at Samayanallur — requested — regarding.

I, Mrs. Sujitha.R, M.Sc (N) II year student, College of Nursing, Madurai Medical College, Madurai in fulfillment of M.Sc., Nursing course, have a plan to conduct a study on topic mentioned below at Samayanallur, Madurai — 20.

The topic is "EFFECTIVENESS OF LADY'S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI".

Kindly consider my request and permit me to conduct the study.

Thanking you,

Yours faithfully,

PLACE:MADURAI

DATE: 30.08.2013

Forwarded
S-P-7
30/8/13
Principal I/C
COLLEGE OF NURSING
Madurai Medical College
Madurai-20.

S.
(Sujitha.R)

PERMISSION SEEKING LETTER

From

SUJITHA.R,
M.Sc (N) II Year student,
Madurai Medical College,
Madurai.

To

The Block Medical Officer,
Primary Health Centre,
Samayanallur, Madurai-20.

Through: The proper Channel

Respected Sir,

Sub : College of Nursing, Madurai Medical College, Madurai — M.Sc (N) II year Community health Nursing Student — Permission for conducting study at Samayanallur — requested — regarding.

I, Mrs. Sujitha.R, M.Sc (N) II year student, College of Nursing, Madurai Medical College, Madurai in fulfilment of M.Sc., Nursing course, have a plan to conduct a study on topic mentioned below at Samayanallur, Madurai — 20.

The topic is “EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI”.

Kindly consider my request and permit me to conduct the study.

Thanking you,


Yours faithfully,

PLACE: MADURAI

DATE: 30.08.2013

permitted
30/8/13
BLOCK MEDICAL OFFICER
Govt. Primary Health Centre,
From
Samayanallur
Madurai Dist
SUJITHA.R

Forwarded
S.P.—T—
30/8/13
Principal I/C
COLLEGE OF NURSING
Madurai Medical College
Madurai-20.


(Sujitha.R)

PERMISSION LETTER

From

SUJITHA.R,
II year M.Sc (N) student,
College of nursing,
Madurai medical college,
Madurai.

To

Dr.S.SUBRAMANIYAM,
Department of Siddha medicine,
Samayanallur primary Health Centre,
Madurai.

Through

THE PRINCIPAL,
College of Nursing,
Madurai Medical College,
Madurai.

Respected Sir,

Sub: Requesting permission to conduct dissertation in Samayanallur primary health centre area.

This is for your kind information that as a part of my curriculum requirement I am planning to conduct a study on **“EFFECTIVENESS OF LADY’S FINGER JUICE IN THE CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETES MELLITUS CLIENTS AGED 40-60 YEARS ATTENDING OPD AT SAMAYANALLUR PHC,MADURAI.** I kindly request you sir to provide your valuable opinion on Effect of Lady’s finger juice in the control of blood sugar level of type 2 DM clients and provide permission and guidance to conduct the study in primary health centre, Samayanallur at Madurai.

Thanking you

Yours faithfully

(SUJITHA.R)

Forwarded & permitted by
Principal
30/9/13
Place: Madurai
உதவி சித்த மருத்துவ அலுவலர்
அரசு ஆரம்ப சுகாதார நிலையம்
சமயனல்லூர்
Date: 29-9-2013
மதுரை மாவட்டம்
Acting
Principal
Sulesthaney
Sulesthaney

Forwarded
S-P-T
30/9/13
Principal I/C
COLLEGE OF NURSING
Madurai Medical College
Madurai-20.

APPENDIX - IV

CERTIFICATE OF VALIDATION

This is to certify that the tool

SECTION A — BASELINE PROFILE PROFORMA

SECTION B — ASSESSMENT OF BLOOD SUGAR LEVEL

(FASTING AND POSTPRANDIAL)

Prepared for data collection by SUJITHA.R, II Year M.Sc Nursing student, College Of Nursing, Madurai Medical College, Madurai who has the undertaken the study field on dissertation entitled **“EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI”** has been validated by me.



SIGNATURE OF THE EXERT

NAME:

Dr. JULIET SYLVIA

DESIGNATION:

Professor

DATE:

16/09/18

JULIET SYLVIA. H
Professor & Head of the Department.
Community Health Nursing
Sacred Heart Nursing College
MADURAI 625020

CERTIFICATE OF VALIDATION

This is to certify that the tool

SECTION A — BASELINE PROFILE PROFORMA

SECTION B — ASSESSMENT OF BLOOD SUGAR LEVEL

(FASTING AND POSTPRANDIAL)

Prepared for data collection by SUJITHA.R, II Year M.Sc Nursing student, College Of Nursing, Madurai Medical College, Madurai who has the undertaken the study field on dissertation entitled **“EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI”** has been validated by me.

SIGNATURE OF THE EXERT

NAME:

Dr. Saleem
11/9/13.

DESIGNATION:

Dr - M - SALEEM

DATE:

ASSOCIATE PROFESSOR
Institute Of Community Medicine
Madurai Medical College
Madurai

CERTIFICATE OF VALIDATION

This is to certify that the tool

SECTION A — BASELINE PROFILE PROFORMA

SECTION B — ASSESSMENT OF BLOOD SUGAR LEVEL

(FASTING AND POSTPRANDIAL)

Prepared for data collection by SUJITHA.R, II Year M.Sc Nursing student, College Of Nursing, Madurai Medical College, Madurai who has the undertaken the study field on dissertation entitled **“EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI”** has been validated by me.



SIGNATURE OF THE EXERT

NAME: *VIVEKANANTHAN*

DESIGNATION: *S.C. VIVEKANANTHAN,
M.D., D.I.C.*

DATE: *11.9.2013*

CERTIFICATE OF VALIDATION

This is to certify that the tool

SECTION A — BASELINE PROFILE PROFORMA

SECTION B — ASSESSMENT OF BLOOD SUGAR LEVEL

(FASTING AND POSTPRANDIAL)

Prepared for data collection by SUJITHA.R, II Year M.Sc Nursing student, College Of Nursing, Madurai Medical College, Madurai who has the undertaken the study field on dissertation entitled “EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI” has been validated by me.



SIGNATURE OF THE EXERT

NAME: *Dr. J. John Sam Arun Prabhu.*

DESIGNATION: *Professor.*

DATE: *3/9/13.*

Dr. J. John Sam Arun Prabhu,
M.Sc.,(N)M.Sc.,(Psy),PGDHM
HOD, Community Health Nursing
CSI Jeyaraj Annapackiam
College of Nursing
Pasumalai, Madurai-625 004

CERTIFICATE OF VALIDATION

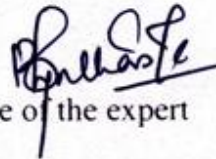
This is to certify that the tool

SECTION A — BASELINE PROFILE PROFORMA

SECTION B — ASSESSMENT OF BLOOD SUGAR LEVEL

(FASTING AND POSTPRANDIAL)

Prepared for data collection by SUJITHA.R, II Year M.Sc Nursing student, College Of Nursing, Madurai Medical College, Madurai who has the undertaken the study field on dissertation entitled “EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR LEVEL AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI” has been validated by me.



Signature of the expert

Name : Mrs. BHARATHASORUBA
RANI'S

Designation : Asso. PROFESSOR

Date : 27.9.13.

APPENDIX V

CERTIFICATE OF TAMIL EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the dissertation by **SUJITHA.R** II year M.Sc(N) student, college of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on Dissertation entitled “**A STUDY TO ASSESS THE EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI**” has been edited for Tamil language appropriateness.

NAME: K.SOUNDARAPANDIAN

DESIGNATION:

P.G. ASST IN TAMIL

INSTITUTION:

A.A. Govt. Hr SEC. SCHOOL
MAYANPETTAI .



SIGNATURE

அறிஞர் அண்ணா
அரசினர் மேல் நிலைப் பள்ளி,
அய்யன்பேட்டை.



CERTIFICATE OF ENGLISH EDITING

TO WHOM SO EVER IT MAY CONCERN

This is to certify that the dissertation by **SUJITHA.R** II year M.Sc(N) student, college of Nursing, Madurai Medical College, Madurai, who has undertaken the study field on Dissertation entitled **“A STUDY TO ASSESS THE EFFECTIVENESS OF LADY’S FINGER JUICE ON BLOOD SUGAR AMONG TYPE 2 DIABETES MELLITUS CLIENTS AT SAMAYANALLUR, MADURAI** “has been edited for English language appropriateness.

NAME: *R. JAYA*


SIGNATURE: *பண்ணா அரவிந்தன்*
அரவிந்தன் பண்ணா
அய்யம்பட்டை.

DESIGNATION: *P.G. Assistant (ENGLISH)*

INSTITUTION:



APPENDIX VI

QUALITY CONCEPTS

67, 1st Floor, P&T Nagar Main Road,
P&T Nagar, Madurai - 625 017.
Tel : 91-452-4231644
E-mail : qualityconcepts@in.com

CALIBRATION CERTIFICATE


01. Certificate No. & Date : 20131709 19.11.2013
02. Page no. : 01 of 01
03. Name of the Client : **R.Sujitha,
Madurai.**
04. Name of the Instrument : Glucometer
05. Identification No. of the instrument : SAFCF0NL
06. Range of the instrument : -
07. Least Count : -
08. Make : One Touch
09. Calibrated on : 16.11.2013
10. Next Calibration due on : 16.11.2014 (User defined)
11. Standards Followed : -

12. Calibration Results

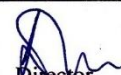
Sl. No.	Indicated Value mg/dl	Standard Value mg/dl	Error mg/dl
01	51	50	1
02	112	110	2
03	204	200	4
04	302	300	2
05	382	380	2

13. Calibration Traceable to : STANDARD SOLUTIONS
14. Allowable Tolerance as per IS 3390 : ± 10 mg/dl
15. Instrument status : Deviations are within specified limits

**Note: Calibrated and certified for ISO and other Quality System Standards' requirement.
The results were observed at the time of calibration.**

Calibrated by
Signature : 
Designation : Chief Technician



Approved by
Signature : 
Designation : Director

APPENDIX VII

ஓப்புதல் படிவம்

பெயர் :

தேதி :

வயது :

ஆராய்ச்சி சேர்க்கை எண்.

மதுரை மாவட்டம், சமயநல்லூரில் வசிக்கும் நீரழிவு வகை II நோயாளியான எனக்கு வெண்டைக்காய் சாறு 150 மில்லி தினமும் காலையில் வெறும் வயிற்றில் தொடர்ச்சி இரத்தத்தில் சர்க்கரையின் அளவு குறைகிறதா என்பதை அறிய எனக்கு பூரண சம்மதம். இதனால் எந்தவித இடையூறும், விளைவும் ஏற்படாது என்று ஆராய்ச்சியாளர் மூலம் விரிவாக எடுத்துரைக்கப்பட்டது. இந்த ஆராய்ச்சியை நடத்த என்னுடைய ஒத்துழைப்பையும், சம்மதத்தையும் முழுமனதுடன் தெரிவித்துக் கொள்கிறேன் .

கையொப்பம்

APPENDIX VIII

PHOTOGRAPHS

The researcher interviewing the Client



The researcher assessing blood sugar level



Lady's finger juice



The researcher gives lady's finger juice to client



