

DISSERTATION ON

**“A STUDY TO ASSESS THE EFFECTIVENESS OF CURRY
LEAVES IN REDUCING BLOOD SUGAR AMONG TYPE II
DIABETES CLIENTS IN SELECTED RURAL AREAS AT
MEDAVAKKAM, CHENNAI”.**

**MSc (NURSING) DEGREE EXAMINATION
BRANCH –IV COMMUNITY HEALTH NURSING**

COLLEGE OF NURSING

MADRAS MEDICAL COLLEGE, CHENNAI – 03.



A dissertation submitted to

**THE TAMILNADU DR.M.G.R. MEDICAL UNIVERSITY,
CHENNAI – 600 032.**

In partial fulfillment of requirements for the degree of

MASTER OF SCIENCE IN NURSING

APRIL 2016

CERTIFICATE

This is to certify that this dissertation titled “**A study to assess the effectiveness of curry leaves in reducing blood sugar among type II diabetes clients in selected rural areas at Medavakkam, Chennai**” is a bonafide work done by **Mrs K.N.Gomathi, II Year, M.Sc(N)** student, College of Nursing, Madras Medical College, Chennai – 600003 submitted to **The Tamilnadu Dr.M.G.R. Medical University, Chennai-32**, in Partial fulfillment of the requirements for the award of Degree of **Master of Science in Nursing, Branch - IV, Community Health Nursing** under our guidance and supervision during the academic period **2014-2016**.

DR.V. KUMARI MSc(N),Ph.D,
Principal ,
College of Nursing,
Madras Medical College,
Chennai-03.

DR.VIMALA, MD.,
Dean,
Madras Medical College,
Chennai-03.

ABSTRACT

TITLE:A study to assess the effectiveness of curry leaves in reducing blood sugar among type II diabetes clients in selected rural areas at Medavakkam, Chennai

India leads the world with largest number of diabetic subjects earning the dubious distinction of being termed the "diabetes capital of the world".

Need for the study

India is currently experiencing an epidemic of diabetes mellitus. From the available region wise population based studies it is clear that in the last two decades, there has been a marked increase in the prevalence of diabetes among both urban as well as the rural Indians, with southern India having the sharpest increase. With these projected increase in the diabetic population in future, South-East Asian countries will become the most challenged region in the World and will bear the maximum global burden of the diseases in the initial decades of the 21st century. Looking in to the severity of the disease and beneficial effects of the herbal plant in managing diabetes, present study is planned.

Objectives:

The main aim of the study was to evaluate the effectiveness of Curry leaves powder in reducing the blood sugar level among the Type II Diabetic patients residing at rural areas of Medavakkam.

Methodology:

Research approach: quantitative research approach

Study Setting: The study was conducted in rural area of Medavakkam, Chennai.

Research design: experimental study ,pre testpost test only design

Sampling technique: simple random sampling technique

Sample size : In this study the sample comprises of 60 Type-II Diabetic adults in which 30 clients were in experimental and 30 were selected in the control group.

Data collection procedure:

The investigator selected 60 samples (30 participants in experimental and 30 in control group) by simple random sampling technique using lottery method. Pre test of post-prandial blood glucose level was assessed by glucometer for both experimental and control group, same instrument was used for both the group and then for the experimental group 10gm of curry leaves powder was given with food, morning/ daily in person for 14 days post assessment was conducted on the 15th day for both experimental and control group.

Data analysis

The data were analyzed with descriptive statistics like mean, and standard deviation. Inferential statistics like chi-square test, independent t-test were used to analyze the clinical variables. p value of <0.05 was considered statistically significant.

Discussion:

On comparing the pre and post blood glucose level among Type II Diabetic patients in experimental group and control group, the obtained mean difference were 10.44% and 0.76% respectively. The finding implies that there is a significant difference between the pre and post-prandial blood sugar level in experimental group. Thus the hypothesis was proved.

Conclusion:

The study was concluded with the findings that there is a significant reduction in blood sugar level of clients in experimental group who were given 10gms of curry leaves powder for 14 days along with their food.

LIST OF CONTENTS

CHAPTER	CONTENT	PAGE NO
I	INTRODUCTION	1
	1.1 Need for the study	3
	1.2 Statement of the problem	5
	1.3 Objectives of the study	5
	1.4 Operational definitions	5
	1.5 Assumptions	6
	1.6 Hypotheses	6
	1.7 Delimitation	6
II	REVIEW OF LITERATURE	
	2.1 Review of related Literature	7
	2.2 Conceptual framework	17
III	RESEARCH METHODOLOGY	
	3.1 Research Approach	21
	3.2 Duration of data collection	21
	3.3 Study settings	21
	3.4 Study design	22
	3.5 Study population	22
	3.6 Sample size	22
	3.7 Sampling criterion	23
	3.7.1 Inclusion criteria	
	3.7.2 Exclusion criteria	
	3.8 Sampling technique	23
	3.9 Research variables	23
	3.10 Development and description of tool	24
	3.10.1 Development of tool	24
	3.10.2 Description of tool	24
	3.10.3 Content Validity	25

CHAPTER	CONTENT	PAGE NO
	3.11 Ethical consideration	25
	3.12 Pilot study	25
	3.13 Reliability of the tool	26
	3.14 Data collection procedure	26
	3.15 Data entry and analysis	27
IV	DATA ANALYSIS AND INTERPRETATION	29
V	SUMMARY OF THE RESULTS	40
VI	DISCUSSION	44
VII	CONCLUSION&RECOMMENDATIONS	
	7.1 Major findings of the study	49
	7.2 Implications of study	50
	7.3 Limitation	51
	7.4 Recommendations	52
	Conclusion	52
	REFERENCES	53

LIST OF TABLES

Table No	TITLE	Page No
1.	Prevalence of Diabetes (WHO-2014)	3
3.1	Intervention Protocol	27
4.1	Distribution of demographic variables of Type II Diabetic clients	30
4.2	Distribution of clinical variables of Type II Diabetic clients	32
4.3	Comparison of blood sugar level among study clients before and after intervention (Experimental group)	34
4.4	Comparison of blood sugar level among study clients before and after intervention (control group)	34
4.5	Comparison of blood sugar level among study clients in both group	35
4.6	Comparison of pre test and post test blood sugar level among Experimental and control group	35
4.7	Score of post test blood sugar level in both experimental and control group	36
4.8	Mean difference of effectiveness curry leafs	37
4.9	Effectiveness of the study in %(with 95% CI)	37
4.10	Association between level of blood glucose reduction and the clinical variables in experimental group	38

LIST OF FIGURES

Figure No	TITLE
1.	Conceptual Framework
2.	Schematic representation of the plan
3.	Age wise distribution of Diabetic clients
4.	Age wise distribution of Diabetic clients
5.	Religion wise distribution of Diabetic clients
6.	Education status wise distribution
7.	Occupation wise distribution
8.	Family size of the study participants
9.	Income wise distribution of Diabetic clients
10.	Dietary habit among study participants
11.	Frequency of Non vegetarian among study participants
12.	Frequency of fried items and sweets among study participants
13.	Type of Exercise among study participants
14.	Uses of curry leaves by the study participants
15.	Family history of DM among study participants
16.	Relationship of family members having same disease
17.	Distribution of duration of Diabetes mellitus

Figure No	TITLE
18	Treatment pattern of study participants
19	The type of medications used by the participants
20	The duration of treatment
21	Clients awareness about symptom of low blood sugar level
22	The clients knowledge on complications of Diabetes
23	Mean value of pre test and post test of blood sugar level in experiment group
24	Comparison of pre and post test blood sugar level
25	Decrease level blood sugar level between the experimental and control group
26	Effectiveness of study
27	Association between reduction in blood sugar level and duration of illness
28	Association between reduction in blood sugar level and duration of treatment

LIST OF APPENDICES

S. No	PARTICULARS
1.	Tools for data collection
2.	Permission letter from Institutional Ethics committee
	Certificate of Content Validity
3.	<ul style="list-style-type: none">• Medical Expert• Nursing Expert
4.	Permission Letter from Deputy Director of Health Services
5.	Procedure of Preparation of curry leaves powder
6.	Research Consent Form
7.	English Editing Certificate

LIST OF ABBREVIATIONS

S.NO	ABBREVIATIONS	EXPANSION
1	DF	Degrees of Freedom
2	SD	Standard Deviation
3	CI	Confidence Interval
4	P	Significance
5	Fig	Figure
6	H1 & H2	Alternate Hypothesis
7	M.Sc (N)	Master of Science in Nursing
8	χ^2	Chi square test
9	No	Number
10	DM	Diabetes Mellitus
11	GM	Gram
12	MG	Milligram
13	WHO	World Health Organization
14	NCD	Non-communicable diseases
15	OPD	Out patient department

ACKNOWLEDGEMENT

God's mercy and grace give me hope-for myself, and for our world.

First and foremost, I express my deep sense of gratitude to the Lord Almighty for his blessings and mercies which enabled me to reach this stage and complete my study without any interruption.

The success of this study comes through the invaluable help, guidance and contribution of the faculties, seniors, friends and other well wishers. The Investigator recalls their kindness with a grateful heart and is trying to express these gracious feelings in few words.

I wish to express my sincere thanks to Prof. **Dr.R.Vimala, MD,** Dean, Madras Medical College, Chennai-3 for providing necessary facilities and extending support to conduct this study

I thank whole heartedly to **Dr.R.Lashmi,MSc(N) Ph.D,MBA.,ADME,** former principal,college of Nursing,for guiding and supporting in selection of study and ethical clearance.

I express my heartfelt thanks to **Dr.V. Kumari, M. Sc (N),, Ph.D.,** Principal, College of Nursing, Madras Medical College, Chennai for her continuous support, constant encouragement and valuable suggestions helped in the fruitful outcome of this study.

I deem it a great privilege to express my sincere gratitude and deep sense of indebtedness to my esteemed teacher **Ms.J.S.ElizabethKalavathy, M.Sc (N),,** Reader, College of Nursing, Madras Medical College, Chennai for her timely assistance and guidance in pursuing the study.

I thank **Dr.Joy Patricia Pushparani, M.D, Director,** Institute of Community Medicine, Madras Medical College, Chennai-3 for the Support and assistance given by them according to their possible manner to complete this study.

I wish to express my special heartfelt thanks and sincere gratitude to **Dr.S.Rajasekaran, MBBS,DPH,Deputy Director Of Health Services,** for granting permission to conduct the study in Medavakkam (Rural) Community area.

I extend my sincere thanks to **Mr.Padmanaban M.Sc., (Statistics) Scientist(B),NIRRH Field Unit, ICMR,KMC Hospital** for suggestion and guidance on statistical analysis.

It is my immense pleasure and privilege to express my gratitude to **Mrs. EbiGoldaMary, M.Sc (N),** Reader, Community Health Nursing, Madha College of Nursing, Kundrathur for validating this tool.

I wish to express my gratitude **Dr.E.Ravichandran, M.B.B.S,** Medical officer , Primary Health Centre, Medavakkam.

I wish to express my gratitude to **Mrs.G.Shanthi, MSc(N)., Mrs.L.Shanthi, MSc(N).,** Lecturers and to all the **Faculty Members** of College of Nursing, Madras Medical College for their valuable guidance in conducting this study.

I extend my thanks to **Mr. Ravi, B. A, B.L.I.Sc.,** Librarian, College of Nursing, Madras Medical College, Chennai-3 for his co-operation and assistance which built the sound knowledge for this study.

I am grateful to all my classmates and my friends for their support, interest, encouragement as well as prayers, thereby making me taste success in all the difficulties faced during the study.

My heartfelt thanks to all **clients participating** in this study, residing in Kalaignar Nagar, Medavakkam, community area in Chennai, for their fullest cooperation.

I wish to extend my heartfelt thanks to my family members and my parents.

Once again, I thank **the Lord Almighty** for his blessings, wisdoms and direction. Finally, my whole hearted thanks and gratitude to one and all, that helped me on my way to success.

CHAPTER-I

INTRODUCTION

“Every human being is the author of his own health or disease”

--Buddha

Diabetes is a group of diseases characterized by increased levels of glucose in the blood resulting from defects in insulin secretion, insulin action, or both. Normally, a certain amount of glucose circulates in the blood. The major sources of this glucose are absorption of ingested food in the gastrointestinal tract and formation of glucose by the liver from food substances.

Insulin, a hormone produced by the pancreas, controls the level of glucose in the blood by regulating the production and storage of glucose. In diabetes, the cells may stop responding to insulin or the pancreas may stop producing insulin entirely. This may lead to hyperglycemia, which may result in acute metabolic complications. Long term effects of hyperglycemia contribute to macro vascular complications.

India leads the world with largest number of diabetic subjects earning the dubious distinction of being termed the "diabetes capital of the world". India is now the country with the most diabetic people, and Indian migrants in many parts of the world have a higher frequency of diabetes than the indigenous population has. There has been a progressive rise in the prevalence of diabetes in India since the 1970, with increase from about 2% to 12% in urban populations.

Diabetes is an **"Iceberg" disease**. Although there is increase in both prevalence and incidence of Non-insulin dependent diabetes globally, it has been especially dramatic in newly industrialized countries and in developing countries. 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. The most important demographic change to diabetes prevalence across the world appears to be the increase in the proportion of people above 65 years of age.

The prevention and control of the diabetes pandemic and its complications is a major public challenge, but there is hope for the future. The progress of research in all fields of diabetes therapeutics from diabetes treatment to continuous glucose monitoring systems to novel insulin delivery system has been spectacular.

Recently There are different modalities of treatment for Diabetes Mellitus. Among them, in India alternative medicine plays an important role, eg: Ayurveda, Homeopathy, Siddha, yoga, naturopathy etc. In Ayurveda herbal extracts from plant roots, leaves, flowers etc are commonly used as a mode of treatment. The role of Ayurveda in control of diabetes is under exploration. Some studies reveals the effectiveness of curry leaves in reducing blood sugar.

Pharmacological properties *Murraya koenigii* has been mentioned in the traditional medicinal system Ayurveda (Sathyavati et al., 2011), Bark, root, leaves, fruits and fruit pulp of *Murraya koenigii* (Curry leaves) are widely used in the treatment of diabetes.

The aqueous extract of these leaves may be prescribed as adjunct to dietary and drug treatment for controlling diabetes mellitus. This findings create an inspiration for the investigator to conduct this study in urban community area where she found more diabetic clients. This curry leaves can easily available and affordable by the community people .

1.1 Need for the study

India is currently experiencing an epidemic of diabetes mellitus. In order to understand the true extent of the problem and its impact on diabetes care, there is a need to review the epidemiology of diabetes from different regions of India. The earliest national study reported an overall prevalence of 2.1 % in urban areas and 1.5% in rural areas. From the available region wise population based studies it is clear that in the last two decades, there has been a marked increase in the prevalence of diabetes among both urban as well as the rural Indians, with southern India having the sharpest increase. Today, the prevalence of diabetes in the urban metros of India is approaching the figures reported in the affluent migrant Indians.

TABLE1 Prevalence of Diabetes (WHO-2014)

Country	In 2000-2014	In 2030(Anticipated)
Africa	1,71,000,000-366 Million	3,66,000,000-552Million
America	33,016,000-29.1million	66,812,000-366million
Europe	33,332,000-385million	47,973,000-438million
India	31,705,000-171million	79,441,000-366million

The World Health Organization reports showed that the estimation of Type II Diabetes Mellitus in India is

In the year

- 2000 - 32 million
- 2006 - 38.9 million
- 2010 - 40.09 million
- 2025 - 69.9 million
- 2030 - 80-87 million

Prevalence of Type II Diabetes Mellitus in Chennai is

- 2000 - 11.6 %
- 2004 - 13.5 %
- 2010 - 14.3%

Dr.Mohan and Dr.Joshi, Chennai based diabetologist, found that the reason for diabetes's march across India was changing dietary patterns, lower physical activity and physiological factors such as depression. The biggest challenge ahead for India is early detection and treatment. It is always believed that diabetes is not prevalent among the poor. But our studies in Chennai is otherwise. The prevalence of diabetes mellitus in 2001 in a poor section in T.Nagar was 6.5 % and it grew 16.5 % in 2011.

Curry leaves (a.k.a. Curry Patta) are dark, shiny, green, aromatic and flavourful leaves of plant scientifically called *Murraya Koenigi*. Curry leaves have a special place in Ayurvedic Medicines, because of their many health benefits. The curry leaves could control the amount of glucose entering the bloodstream. Ayurvedic research suggests a paste of about 8 to 10 fresh, fully-grown curry leaves taken on an empty stomach in the morning may control non-insulin dependent diabetes mellitus. It also cures diabetes due to obesity as the leaves have weight reducing properties.

With these projected increase in the diabetic population in future, South-East Asian countries will become the most challenged region in the World and will bear the maximum global burden of the diseases in the initial decades of the 21st century. Indeed the number of cases, the options and strategies currently available to treat and prevent its complications is impressive. It remains to be seen if we are able to practically implement these therapeutic strategies so that we ameliorate the enormous health burden and financial burden associated with diabetes. Most of the studies reveal and say about the treatment of complications but very few studies say about management of diabetes mellitus. Looking in to the severity of the disease and beneficial effects of this herbal plant in managing diabetes, present study is planned.

The above facts triggered the investigator to do an experimental study to assess the effectiveness of curry leaves up on hyperglycemia.

1.2 Statement of the problem

“A study to assess the effectiveness of curry leaves in reducing blood sugar among type II diabetes clients in selected rural areas at Medavakkam, Chennai”.

1.3 Objectives of the study

- To identify the blood sugar level in type II Diabetic clients by routine blood sugar examination for both experimental and control group.
- To evaluate the effectiveness of curry leaves on blood sugar level among the clients in the experimental group.
- To compare the effectiveness of curry leaves in control of blood sugar levels in post test result between control and experimental group.
- To associate certain demographic and clinical variables with the reduction of blood sugar level in experimental group.

1.4 Operational definitions

Effectiveness

It refers to the results of blood sugar level obtained after the administration of 10 gms of curry leaves powder for 14 days as measured by the glucometric readings.

Diabetic clients

Adults above 40 years who have been diagnosed as having Type II Diabetes Mellitus and who are on treatment with oral hypoglycemic agents.

Diabetes mellitus

Increased blood sugar level more than 160mg/dl (post-prandial) as a result of disturbance in the oxidation and utilization of glucose which is secondary to a malfunction of the beta cells of the pancreas.

Curry leaves

It refers to the leaves of plants whose botanical name is *Murraya koicnigi*. The leaves are taken from the plant, dried under shadow and powdered which is given at 10gms/day for a period of 14 days along with breakfast.

1.5 Assumptions

The study assumes that

1. Consumption of curry leaves powder reduces the blood sugar level of Type II Diabetes Mellitus clients.

1.6 Hypothesis

H1: There is a significant difference between pretest and post test blood sugar level in experimental group and control group.

H2: There is an association between the reduction of blood sugar level and selected demographic variables and clinical variables among Type II Diabetes Mellitus clients.

1.7 Delimitations

- The sample size is limited to 60 adults.
- Prescribed data collection period is only for four weeks.

CHAPTER II

REVIEW OF LITERATURE

This chapter deals with the information collected with relevant to the present study through published and unpublished materials. These publications are the foundation to carry out the research work. Highly extensive review of literature pertaining to research topic was done to collect maximum information for laying foundation of the study.

This section has two parts:

- 2.1 : Review of related literature
- 2.2 : Conceptual framework

2.1 Review of related literature

It was divided in to 3 categories

- 2.1.1 Literature related to prevalence and incidence of Type II Diabetes mellitus
- 2.1.2 Studies related to health benefits of curry leaves
- 2.1.3 Studies related to curry leaves and Diabetes mellitus.

2.1.1.Literature related to prevalence and incidence of Type II Diabetes mellitus

Andrew Grandinetti et al., (2013) conducted a study in rural community Hawaii to assess the Prevalence of diabetes. A cross sectional study was done among the samples of 1452 men and non pregnant women who were above 18 years of age. The results revealed that the prevalence of diabetes is three fold higher among Asian and Hawaiian groups than among Caucasians, even after adjusting for other risk factors.

Sudheer, B et al., (2013) conducted a study on prevalence of known diabetes in Tirupathi urban population and to find out the role of other factors a cross sectional study was conducted and the results revealed that out of 220 known diabetic patients 16%(35) were Type I diabetes and 84% (185) were Type II Diabetic patients and majority of them 75%(32) fall in the age group between 46-55 years.

Misra p et al., (2012) conducted study on extent of problem of diabetes in rural India. A systematic search was performed using electronic as well as manual methods for a period of 15 years and the results revealed that 2.02 per1000 population per year increase in diabetes prevalence. The rate of increase was high in males (3.33/1000/year) as compared to females (0.88/1000/year).

Constantine GR (2012) studied the prevalence of diabetes and pre-diabetes in adults in Srilanka, in the cross sectional study among 4532 patients, the results revealed that the prevalence of overall urban and rural diabetes and pre-diabetes was 11.5%. 13.6% respectively.

Nohomi clement (2011) stated in his study the prevalence of Type II Diabetes among urban Indians was reported to be 2.1 % which has risen to 12-16%. Looking at the region-wise prevalence, the prevalence of diabetes in southern parts of India was found to be higher -13.5 % among Chennai residents; Bangalore 12.4%; Hyderabad 16.6% than eastern India 11.7 % (Kolkata) Northern India 11.6% (new Delhi) and Western India 9.3% (Mumbai) and has concluded that in the last two decades there has been a marked increase in the prevalence of diabetes.

Ohison L.O et al., (2011) conducted the study on risk factors for Type II Diabetes mellitus, a homogenous sample of randomly selected 54 samples from Swedish population with the diabetes incidence 6.1%, the results shows that those with a positive family history of diabetes have 2.4 fold higher risk for developing diabetes than without such history.

World Health Organization (2010) has stated in a study to assess the prevalence of Type II Diabetes mellitus in India, estimated that 19.4 million individuals are affected by type2 diabetes mellitus in India in the year 1995. It is likely to go up to 57.2 million by the year 2025. Every fifth diabetic patient in the world is in India and every fifth adult in urban area and the global number of people with diabetes is expected to be at least 220 million in 2010 and reaching 300 million by the year 2025.

Oldroyd, Banerjee, Heald Cruickshank (2010) stated that the global prevalence of diabetes for all age group is estimated to be 2.8%. Type-II diabetes accounts for at least 90% of diabetes worldwide. Diabetes incidence, prevalence and disease progression varies by ethnic group and concluded that although the origin of the ethnic difference in incidence need further clarification.

Lau cheun-yen, Qureshi, Scott. (2010) in their study prevalence of Type II Diabetes in southern part of Iran, prevalence of diabetes and glucose tolerance was found to be 13.6% and 15.6% respectively. Also, age-adjusted prevalence for both genders was calculated 12% (10.2 for men, 12.9% for women)and concludes that diabetes become more prevalent 8.3 % in people of age 30-39 years, and 24.8 % in those of age 50 to 64 years and concluded that prevalence of diabetes increases with that of age.

Leslie Sue Lieberman (2010) has conducted an perspective study on dietary, evolutionary, and modernizing influences on the prevalence of Type II Diabetes to elucidate the etiology of the current epidemic of Type II Diabetes estimated at 151 million people and concluded that the processes of modernization or globalization include the availability and abundance of calorically dense/low-fiber/high-glycemic foods and the adoption of sedentary Western lifestyles, leading to obesity among both children and adults in developed and developing countries.

Zimmet (2009) in his study on Type II (non-insulin-dependent) Diabetes an epidemiological overview studies have shown that Type II (non-insulin dependent) Diabetes has a global distribution and its prevalence varies from country to country, in different ethnic groups in the same country, and between the same ethnic group undergoing internal or external migration. Rural-urban and migration studies indicate that change towards a 'Westernized' lifestyle is associated with a dramatic increase in the prevalence rates for Type II Diabetes, low prevalence rates for Type II Diabetes are seen in Eskimos and populations of the Far East, while the highest are seen in American Indians, urbanized Pacific Island populations, and migrant Asian Indians. Available evidence suggests that these latter groups have a genetic susceptibility to Type II Diabetes ('diabetes genotype') and that the disease is unmasked by environmental factors.

Savoca and Miller (2009) A total of 18 studies –8 on type 1 DM and 10 on type 2 DM patients–meeting the inclusion criteria were identified. Studies in patients with type 1 DM revealed that glucose variability has little impact on the development of diabetic complications. Only in two of the eight type 1 DM studies did glucose variability have a significant association with microvascular complications, but not with macrovascular complications. Among type 2 DM studies, a significant positive association between glucose variability and the development or progression of diabetic retinopathy, cardiovascular events and mortality was reported in 9 of 10 studies. Only one type 2 DM study reported no association between glucose variability and progression of retinopathy.

Toljamo and Hentinen (2009)The incidence of type 2 diabetes in the poor population was 20.4 per 1,000 person-years. Compared with their middle-income counterparts, the adjusted odds ratio (OR) for the poor population incidentally identified as having diabetes through hospitalization was 2.2 ($P < 0.001$). Poor persons with diabetes were less likely to visit any diabetes clinic (OR, 0.4; $P < 0.001$). The ORs for the poor population with diabetes to receive

tests for glycated hemoglobin, low-density lipoprotein cholesterol, triglycerides, and retinopathy were 0.6 (0.4–0.9), 0.4 (0.2–0.7), 0.5 (0.4–0.8), and 0.4 (0.2–0.9), respectively.

In Cleaver and Pollourios (2009) In their study Prevalence of diabetes (8.3%) was directly related to the deprivation of the area of residence, especially for women.). Conclusions: Prevalence of diabetes is directly related to deprivation, especially for women.

Smeltzer and Bare (2008) indicate Markers of SES were social caste, household wealth and education. The overall prevalence of self-reported diabetes was 1.5%; this increased to 1.9% and 2.5% for those with the highest levels of education and household wealth, respectively. Nationally in India, a one-quintile increase in household wealth was associated with an OR of 1.31 (95% CrI 1.20 to 1.42) for self-reported diabetes. This association was consistent across states with the relationship found to be positive in 97% of states (28 of 29) and statistically significant in 69% (20 of 29 states).

Gregory (2008). stated that women with polycystic ovary syndrome (PCOS) are insulin resistant, have insulin secretory defects, and are at high risk for glucose intolerance. He performed this study to determine the prevalence of glucose intolerance and parameters associated with risk for this in PCOS women. The prevalence of glucose intolerance was significantly higher in PCOS vs. control women . He conclude that 1) PCOS women are at significantly increased risk for IGT and type 2 diabetes mellitus at all weights and at a young age; 2) these prevalence rates are similar in 2 different populations of PCOS women, suggesting that PCOS may be a more important risk factor than ethnicity or race for glucose intolerance in young women.

2.1.2. Studies related to health benefits of curry leaves

Harish k Handral and Anup pandith (2014) in Asian Journal of Pharmaceutical and Clinical Research It is interesting to note that pure compounds and crude organic extracts of leaves of *Murraya Koenigii* have been screened for some pharmacological activities and found to possess anti-diabetic, cholesterol reducing property, anti-diarrhea activity, cytotoxic activity antioxidant property, antiulcer activity antimicrobial, antibacterial potential and many more useful medicinal properties, Mahanimbine a chemical constituent of *M. koenigii* was isolated from column chromatography of the petroleum ether extract of dried plant.. The possible mechanism by which the mahanimbine decreases blood sugar level may be by potentiating of insulin effect either by increasing the pancreatic secretion of insulin from beta cells of islets of langerhans or by increasing the peripheral glucose uptake. Mahanimbine showed appreciable alpha amylase inhibitory effect as compared with acarbose

Vandana Jain and Munira Momin(2014) in International Journal Of Ayurvedic And Herbal Medicine Curry leaves are rich in many minerals and trace minerals such as Iron, zinc and copper. Therefore, researchers recommended in a study published in January 2007 in "Chemico-Biological Interactions" that people with diabetes may benefit from the addition of curry leaves in the diet. minerals found in curry leaf extract are important for maintaining normoglycemia, or the normal glucose content of the blood. This is done by the activation of pancreatic beta cells, which are responsible for the creation of insulin. While the nutrients in curry account for only about 1 to 2 percent of the required daily intake for these elements, they are bio available, or readily usable by the body. Therefore, the researchers suggested that curry leaves may be useful for the management of diabetes

Shah and Juvekar (2013). Conducted a study to prove The positive ionotropic effect of *Murraya koenigii* extracts and Since ancient times, plants

have been an exemplary source of drugs/medicines. Ayurveda and other Indian literature mention the use of plants in treatment of various ailments. India has about 45,000 plant species and among them, several thousands have been claimed to possess medicinal properties. Researches conducted in last few decades on plants mentioned in ancient literature or used traditionally for diabetes have shown experimental or clinical anti-diabetic activity.

Arulselvan, et al., (2013) *M. koenigii* possesses statistically significant hypoglycemic potential in human volunteers.. The *M. koenigii* extract appeared to be more effective than glibenclamide, a known antidiabetic drug. *Murraya koenigii* has been mentioned in the traditional medicinal system

Adebajo et al., (2012) Antitrichomonal activity was reported by the researchers.

Roy et al., (2009); Ito et al.,(2012) The apoptotic activity of mahanini, pyrayafoline-D and murrufoline-I, corbozole alkaloids from *Murraya koenigii* in human myeloid cancer cell line HL-60 have been reported .

Ramsewak, et al. (2012) and Rahman and Gray, reported antimicrobial activity

Ayurveda (Sathyavati et al.,(2011). Bark, root, leaves, fruits and fruit pulp of *Murraya koenigii* are widely used in the treatment of diabetes, obesity, vomiting, constipation, indigestion, diarrhoea, dysentery, piles, nausea, to relieve kidney pain etc. A few reports are available on the scientific probing to validate the pharmacological properties of *Murraya koenigii*.

Das et al.,(2011).Some constituents of *Murraya koenigii* are reported to have anti fungal activity.

Bhakuni et al., (2011) and Kong et al., (2011) Reported ,Anti-spasmodic and anti-amoebic activity of *Murraya koenigii*

2.1.3. Studies related to curry leaves and Diabetes mellitus

Sathyavati et al., (2013) An experimental study was conducted on the effectiveness of extracts of *murraya koenigi* on the levels of blood glucose. The leaves were cleaned, dried and finely powdered. Each gram of powdered leaf was equal to five grams of fresh leaves which was administered for eight weeks. The concentration of glucose and insulin in both sexes of control group in pre-test and post-test revealed no significant difference. On the other hand, significant changes were observed in the experimental groups in the pretest and post test values. The comparison in the experimental group revealed that aqueous and methanol extracts of *murraya koenigi* were equally potent as that of hypoglycemic agents.

Narayana and Sastry, (2013) and Shah and Juvekar, (2013). An evaluatory study was conducted on the effectiveness of freeze dried leaf powder of *murraya koenigi* as a therapy for control of blood sugar by evaluating its potential of managing various parameters such as FBS, GTT and LD in 50 diabetic models.. The freeze dried leaf powder at a dose of 300 mg/kg was more effective than oral hypoglycemics.(2.5 mg/ kg)

Roy et al.,(2012); Ito et al. ,(2012) An experimental study with Curry leaves powder supplementation (12 g providing 2.5 g fibre) was carried out for a period of 1 month in 30 non-insulin dependent diabetes mellitus patients. The parameters monitored at 1, 15 and 30 days were fasting and 2 hour post-prandial blood sugar levels, serum total cholesterol and its lipoprotein fractions. The results indicated a transient reduction in fasting and post-prandial blood sugar levels at 15-day period with no appreciable changes in other parameters. i.e. either at 15 days or 30 days

Khan et al., (2011) An experimental study conducted on 60 Non Insulin Dependent Diabetes Type 2 subjects in the age group of 45-60 years reveals the facts like this. From among the 60 diabetic subjects 30 were included in the experimental group and the remaining 30 were included in the control group who did not receive any supplementation. Curry Leaves powder of 0.5g was

administered for 90 days. The mean decrease in fasting blood glucose level of the diabetic subjects in the experimental group were found to be 14mg/dl after the treatment with Curry leaves powder with statistical significance at 1% level. The changes observed in the blood glucose value of the experimental and control group were statistically compared and the difference was found to be significant at 1% ($P < 0.01$). The researcher observed a significant reduction in blood glucose levels on oral administration of Curry leaves powder.

Vinuthan et al.,(2011) study published in *Chemico-Biological Interactions* states that due to its rich mineral reserves like those of iron, zinc and copper, curry leaves are important in maintaining normal glucose levels in blood. These minerals activate beta cells of pancreas that are responsible for the production of insulin hormone. Curry leaves also influence metabolism of carbohydrates favorably. They can restore liver and kidney enzymes responsible for breaking down carbohydrates back to their normal levels thus treating diabetes. As diabetic patients have decreased levels of antioxidants, their body cells may die at a faster rate. A study found out that curry leaves can reduce cell death in pancreatic cells which are responsible for insulin production. Curry leaves can reduce blood sugar levels and are specially helpful for people who get diabetes due to obesity

Atal C.K, and Kapoor B.M(2011) A study published in the *Journal of Plant food for Nutrition*, found that curry leaves lower your blood sugar levels by affecting the insulin activity. Apart from this, the presence of fiber in the leaves plays a significant role in controlling your blood sugar levels. Additionally, *kadi patta* is known to improve digestion and alter the way your body absorbs fat, thereby helping you lose weight. This is particularly of significance for people who are obese and suffer from diabetes

Bailey CJ and Day C(2010) A study published in *journal of Ethnopharmacology*, Curry leaves have been found to reduce blood sugar in diabetic rats in a study published in in the Therefore, there is some evidence

that curry leaves may be useful for reducing the severity of diabetes in humans. The rats were treated with curry leaf extract for 30 days

Brand-Miller J (2010) A study published in *International Journal of Biological Chemistry*, Curry leaves may treat diabetes by influencing carbohydrate metabolism. Diabetic rats fed curry leaves for 30 days displayed signs of improved liver and kidney function, according to the findings of a study published in 2007 in the *Specifically*, curry leaves restored liver and kidney enzymes responsible for breaking down carbohydrates back to their normal levels.

Royle & Walsh (2010); Whittemore et al., (2010). Curry leaves are rich in many minerals and trace minerals such as Iron, zinc and copper. Therefore, researchers recommended in a study published in January 2007 in “Chemico-Biological Interactions” that people with diabetes may benefit from the addition of curry leaves in the diet. These minerals found in curry leaf extract are important for maintaining normo glycemia, or the normal glucose content of the blood. This is done by the activation of pancreatic beta cells, which are responsible for the creation of insulin. Therefore, the researchers suggested that curry leaves may be useful for the management of diabetes.

Xie et al., (2009) reported the hypoglycemic and hypolipidemic activity of *Murraya koenigii* in human beings..

Narendhirakannan et al., (2009) reported the antidiabetic affect of ethanol extract of *Murraya koenigii* in study samples..

Vinuthan et al.,(2009) reported antidiabetic activity of methanol extract of *Murraya koenigii*.

Kesari et al., (2009) reported the hypoglycemic effect of aqueous extract of *Murraya koenigii*.

Yadav et al., (2008) reported that the *Murraya koenigii* supplemented diet could reduce the development of insulin resistance and diabetes.

Yadav et al., (2008) reported that feeding of diet containing various doses of curry leaf powder (5, 10 and 15%) to normal adults for 7 days as well as to mild and moderate diabetic adults for 5 weeks showed varying hypoglycemic and anti hyperglycemic effect.

Bawden et al., (2008) reported the alpha amylase inhibitory activity of cold hexane extract of *Murraya koenigii*

Khan et al., (2008) reported the hypoglycemic activity of *Murraya koenigii* and attributed to increased glycogenesis and decreased glycogenolysis and gluconeogenesis. Methanol extract of *Murraya koenigii* leaves are reported to produce hypoglycemia in human volunteers and alloxan induced rats and rabbits .

Santhakumari et al., (2007) reported the hypoglycemic activity of crushed leaves of *Murraya koenigii* in rabbits, human volunteers and alloxan induced diabetic rats.

Iyer and Mani (2007) reported that curry leaves powder supplementation (12g providing 2.5 g fibre) to 30 non-insulin dependent diabetes mellitus patients for a period of 1 month resulted in the transient reduction in fasting and post-prandial blood sugar levels.

Narayana and Sastry (2007) reported the hypoglycemic activity of *Murraya koenigii*. The aqueous extract of the leaves of *Murraya koenigii* after oral administration produced the hypoglycemia in human volunteers.

2.2 conceptual frame work

The study is based on the concept of administration of 10gms of curry leaves powder to Type II Diabetic clients ,will reduce blood glucose level. The investigator adopted the Widenbach's Helping Art of Clinical Nursing Theory(1964) as a base for developing the conceptual framework. Ernestin Widenbach proposes helping the art of clinical nursing theory in 1964 for

nursing which describes a desired situation and way to attain it. It directs action towards the explicit goal.

This theory has three factors:

- 1. Central purpose**
- 2. Prescription**
- 3. Realities**

1. Central purpose:

It refers to what the nurse want to accomplish. It is the overall goal towards which is a nurse strives.

2. Prescription:

It refers to the plan of care for patients. It will specify the natures of action that will fulfill the nurses central purpose.

3. Realities:

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

The conceptual frame work of the nursing practice according to this theory consists of three steps as follows.

- Step-1: Identifying the need for help.
- Step-2: Ministering the needed help.
- Step-3: Validating that the need for help was met.

Step I: Identifying the need for help

This step involves determining the need for help. The Type-II Diabetic adults were identified based on demographic variables (Age, Sex, Education, Occupation, Family Income, Family history, duration of illness, medication used and exercise) inclusive and exclusive criteria, simple random sampling technique was used to assign the adults in experimental and control group.

Step II: Ministering the needed help

10 gms of curry leaves powder was given to experimental group daily in the morning with food for 14 days.

Agent : Investigator

Recipient : Type II Diabetic adults

Goal : To reduce blood glucose level

Means : 10gms of curry leaves powder

Framework : Selected rural areas of Medavakkam, Chennai.

Step III : Validating that need for help was met.

It is accomplished by means of post assessment of blood glucose level. It is followed by an analysis of the findings.

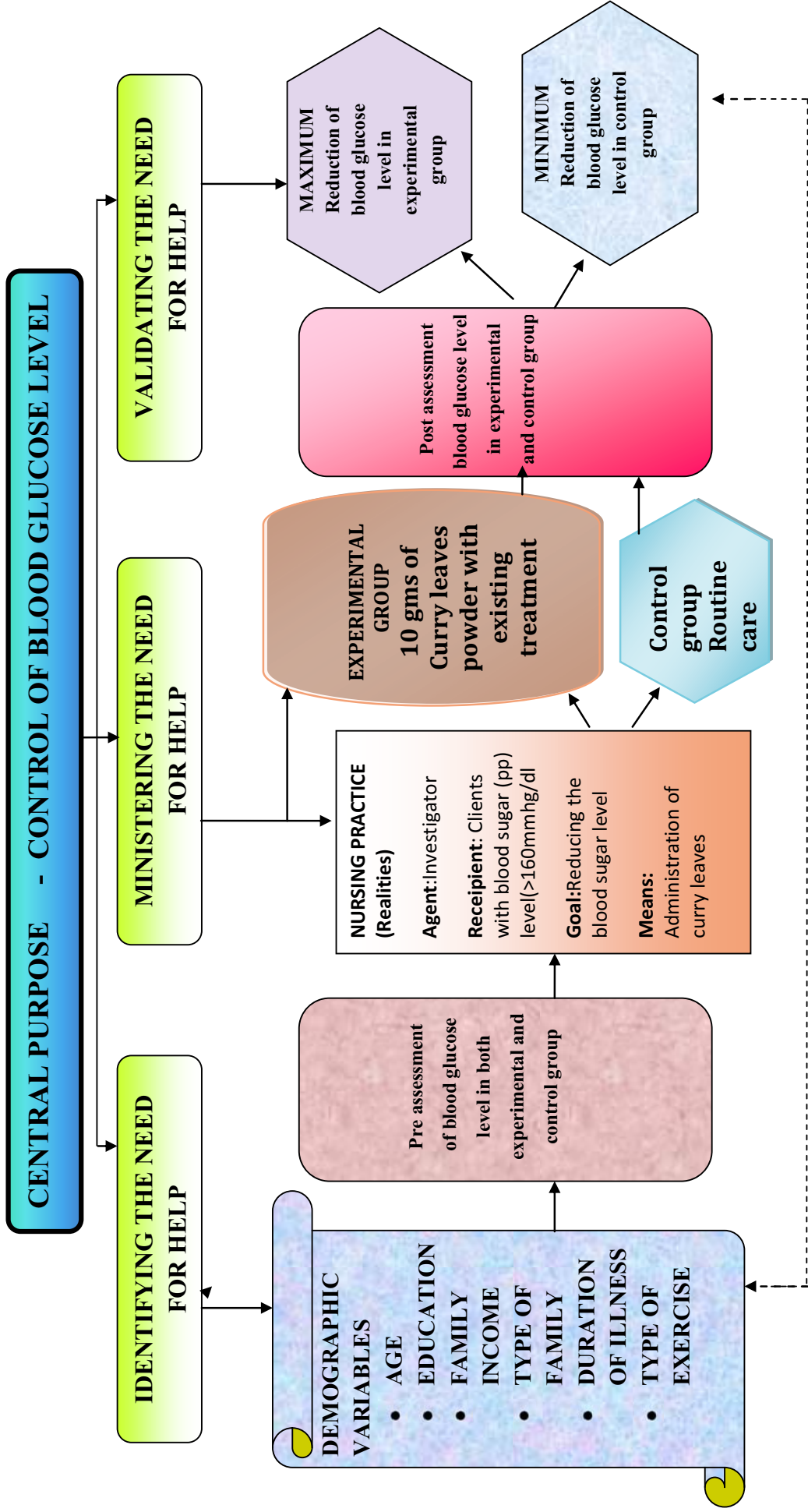


Figure 1: Widenbach's Helping Art of Clinical Nursing Theory(1964)

CHAPTER –III

METHODOLOGY

The chapter deal with the description of the methods and different steps used for collecting and organizing data, such as the research approach, research design, variables, setting of study, population, sample, sample size, sampling technique, critical for sample selection, developing and description of the tool, ethical consideration, content validity, pilot study, reliability, data collection procedures and plan for data analysis.

The present study was done to access the effectiveness of curry leaves in reducing the blood glucose level among Type-II Diabetic adults residing at the rural area of Medavakkam, Chennai.

3.1 Research approach:

A research approach guide the researcher in the natures of the data to be collected and the method of analysis. To accomplish the objectives of the current study quantitative research approach was chosen by investigator.

3.2 Data collection period:

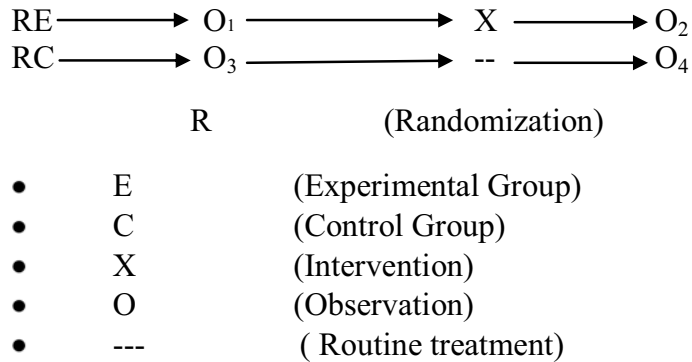
The duration of data collection was from 16.7.2015 to 15.8.2015. (four weeks) .

3.3 Study Setting:

The study was conducted in rural area of Medavakkam, Chennai, 42Kms away from the College of Nursing, Madras Medical College, Chennai, which comes under the Panchayat union of Perumbakkam, Chennai. The centre covering the total population of 1,03,060. Totally there are 12 streets and It has 4 zones. The setting was selected based on the feasibility of conducting the study, availability of sampling and proximity of setting to the investigator.

3.4 Study design:

The overall plan for addressing a research question, including specifications for enhancing the study's integrity is referred to as research design. In this study the investigator select the experimental study , pre test post test only design



Group	Pretest O1	Treatment X	Post test O2
Experimental Group	Blood glucose level assessed	10gms of curry leaves powder along with their routine treatment	Blood glucose level assessed
Control Group	Blood glucose level assessed	-	Blood glucose level assessed

3.5 Study Population:

Population is the entire aggregation of cases that meet the designed set of criteria. In this present study population is subjects who are having Type-II Diabetes Mellitus residing at Kalaingar Nagar, Medavakkam. The total clients with Type-II diabetic mellitus from the selected streets in Kalaingar Nagar were 98.

3.6 Sample size:

In this study the sample comprises of 60 Type-II Diabetic adults who are residing at Kalaingar Nagar, in which 30 patients were in experimental and 30 were selected in the control group.

3.7 Sampling criterion:

3.7.1. Inclusion Criteria

- Clients above 40-60 years who are diagnosed to have Type II Diabetes Mellitus

- Clients who have postprandial blood sugar above 160mg/dl
- Clients who are on oral hypoglycemic agents
- Diabetic clients who are willing to participate in this study

3.7.2. Exclusion Criteria

- Clients who are taking insulin
- Clients who are on other alternative treatment
- Clients who have hypertension and other cardiac diseases
- Clients on concomitant medications.
- Clients who are not having any other complications of diabetes mellitus

3.8 Sampling technique:

The simple random sampling technique was used for the study. The researcher collected the list of Type II Diabetic clients of Kalaignar Nagar, Medavakkam from NCD-OP department in Primary Health Centre, Medavakkam. The list of patients with known diabetic and on regular treatment with oral hypoglycemic drugs, duration of illness within 5 years and without any other diseases were collected with the total of 98 patients, using the lottery method, 60 samples were selected from the sampling frame based on the inclusion and exclusion criteria.

3.9 Research variables:

Variables included in the study are:

Dependent variable - level of blood sugar

Independent variable - Curry leaves powder.

3.10 Development and description of the tool

A structured interview schedule was developed by the investigator, based on the objectives of the study and the tool was developed after an extensive review of literature, internet sources and opinion of the experts in the field, journals and books.

3.10.1 Development of tool :

The tool for data collection was formulated by the investigator by consulting the experts in Nursing, statistics and Community medicine department. The tool has two section with demographic variables and clinical variables.

3.10.2 Description of the tool

The tool consists of two sections. The tool used in this study was an interview and observation schedule on blood glucose for Type II Diabetic adults.

Section-A: Demography data of Type-II Diabetic patients which consist of 14 questions such as age, sex, religion, education, occupation, family income, the nature of work ,diet pattern, frequency of non-vegetarian etc.

Section-B: Medical related information includes, duration of illness, family history of diseases, relationship with clients, duration of illness, type of exercise, type of treatment etc.

Observation schedule includes pre test assessment of postprandial blood glucose level of both experimental and control group and there after post interventional assessment of blood glucose on 15th day for both the group.

Blood glucose assessment

The intervention is to assess and record blood glucose level before and after administration of curry leaves powder.

Group	Pretest O1	Treatment X	Post test O2
Experimental group	Blood glucose level assessed	10 gm of curry leaves powder	Blood glucose level assessed
Control group	Blood glucose level assessed		Assessed

1) Maximum reduction of blood glucose level : 10-20 mg/dl

2) A minimum reduction of blood glucose level : <10mg.dl

3.10.3 Content validity of the tool

The content validity refers to the degree to which instrument measures what is suppose to measure. The content of the tool was validated by Medical Expert, community health Nursing Expert and Statistical Expert. The expert's suggestions were incorporated and the tool was finalized and used by the investigator for the main study.

3.11 Ethical consideration:

The study objectives, intervention and data collection procedure were approved by the research and the ethics committee of Madras Medical College.

3.12 Pilot study

The pilot study was conducted at Medavakkam, Chennai by obtaining prior permission from the authorities and conducted with six adults, who fulfilled the inclusion criteria. The study in which the prior conducted was excluded for the main study. The data related to the variables were collected. The pre and post assessment of blood glucose level was given to the experimental group by investigator in person. Results were analyzed. The investigator found that the instrument was feasible to use and further no modifications were needed before the actual implementation of the study.

3.13 Reliability of the tool:

The reliability of the tool was established by an inter rater reliability method. The obtained reliability coefficient was high ($r = 0.88$)

3.14 Data collection procedure:

The study was conducted in selected streets of Medavakkam, Chennai, after obtaining permission from the Deputy Director of Health services, Chennai, Zonal officer and Medical officer of Primary Health Centre. A self introduction was given by the investigator and the informed written consent was obtained from the adults and purpose of the study was explained to the participants. The objectives and purpose of the study were explained and confidentiality was maintained. The freedom was given to the client to leave the study at his/her will without assigning any reason. No routine care was altered or withheld. Confidentiality of the subject's information was maintained

The data collection procedure was done and the time taken for data collection from each patients was 10-15 mts and 5-10 mts for doing blood test for each adult and the investigator selected 60 samples (30 participants in experimental and 30 in control group) by simple random sampling technique using lottery method based on the inclusion and exclusion criteria. Pre test of postprandial blood glucose level was assessed by glucometer for both experimental and control group, same instrument was used for both the group and then for the experimental group 10gm of curry leaves powder was given with food , morning/ daily in person for 14 days post assessment was conducted on the 15th day for both experimental and control group.

Intervention Protocol

Table 3.1

S.no	Protocol	Experimental group	Control group
1.	Place	Clients home	Clients home
2.	Intervention tool	Curry leaves powder 10gms	Routine treatment
3.	Duration	14 days	14 days
4.	Frequency	Morning/Daily	Morning/Daily
5.	Time	8.00am to 9.00 am	9.00am to 10.00 am
6.	Administered by	Investigator	-----

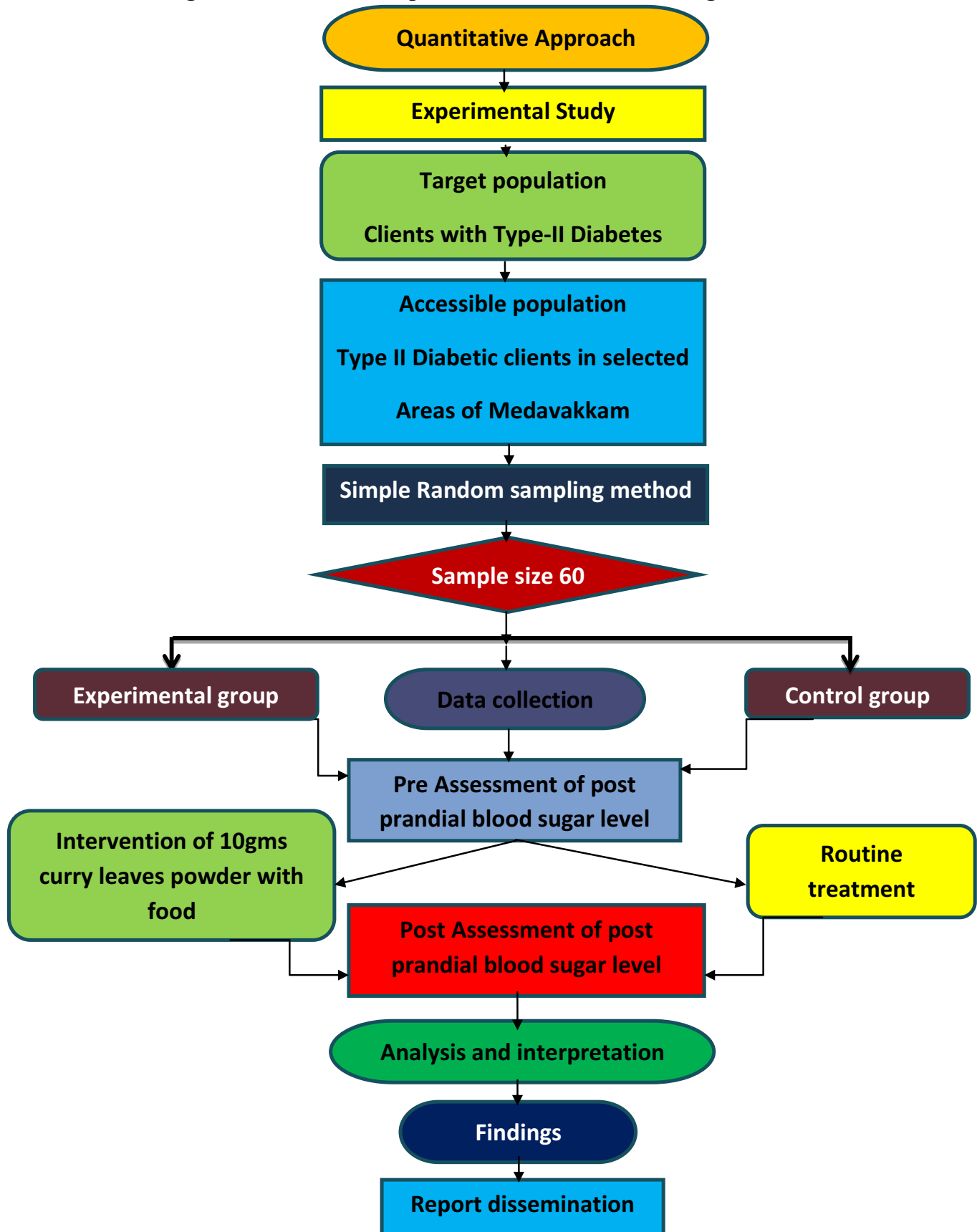
Preparation of curry leaves powder

Curry leaves that are taken from the plant, dried under shadow and powdered which is given at 10gms/day for a period of 14days along with breakfast.

3.15 Data entry and analysis

Data analyze enables the researcher to reduce, summarize, organize, evaluate, interpret and communicate numerical information to obtain answer to research questions. Data analysis done based on the subjective of the study. The data was analyzed to using the descriptive statistics like frequency distribution. Percentage and inferential statistics like standard deviation, chi-square test, independent t-test. The significant finding was expressed in the form of tables and figures. $P < 0.05$ was considered statistically significant.

Figure: 2 Schematic Representation of Research Design



CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with the analysis and interpretation of data collected from 60 samples of Type II Diabetic patients to evaluate the effectiveness of curry leaves on blood glucose level among Type II Diabetic patients residing at Rural areas of Medavakkam, Chennai.

Organization of data

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

Section-A: Frequency and percentage distribution of demographic variables of Type II Diabetic patients in experimental and control group.

Section-B: Assessment of blood glucose level among Type II Diabetic patients before providing curry leaves powder in experimental and control group .

Section-C: Compare the Pretest and post test blood glucose level among Type II Diabetic patients after providing curry leaves powder in experimental and control group.

Section-D: Effectiveness of curry leaves powder in reducing blood sugar level in experimental group.

Section-E: Association of post test blood glucose level among Type II Diabetic clients in experimental group with the demographic variables.

SECTION-A

Table-4.1: Distribution of demographic variables of type II diabetic clients

Demographic variables		Experiment Group(30)		Control Group(30)		Chi square test
		frequency	In %	frequency	In %	
Age	40-45 yrs	6	20.0	4	13.3	$\chi^2=5.148$ P= 0.161
	46 -50 yrs	11	36.7	6	20.0	
	51 -55 yrs	6	20.0	14	46.7	
	56-60 yrs	7	23.3	6	20.0	
Sex	Male	10	33.3%	13	43.3	$\chi^2=0.$ P=0.42
	Female	20	66.7	17	56.7	
Religion	Hindu	25	83.3	23	76.7	$\chi^2=2.483$ P= 0.478
	Muslim	1	3.3	0	0	
	Christian	4	13.3	6	20.0	
	Others	0	0	1	3.3	
Education	Illiterate	9	30.0	3	10.0	$\chi^2=9.095$ P= 0.10
	Primary	10	33.3	9	30.0	
	Secondary	1	3.3	7	23.3	
	Higher secondary	6	20.0	4	13.3	
	Graduate	1	3.3	3	10.0	
	Diploma	3	10.0	4	13.3	
Occupation	Home maker	19	63.3	12	40.0	$\chi^2=4.940$ P=0.176
	Private employee	5	16.7	8	26.7	
	Govt Employee	1	3.3	5	16.7	
	self employee	5	16.7	5	16.7	
Family members	<2	11	36.7	7	23.3	$\chi^2=4.056$ P=0.25
	3-4	11	36.7	13	43.3	
	4-5	6	20.0	10	33.3	
	>5	2	6.7	0	0	
Income	< 4726	0	0	1	3.3	$\chi^2=1.822$ P=0.610
	Rs 4727-7877	9	30.0	6	20.0	
	Rs7878-11816	13	43.3	13	43.3	
	> 11817	8	26.7	10	33.3	
Dietary Habit	Vegetarian	7	23.3	7	23.3	$\chi^2=0.00$ P=1.00
	Non-vegetarian	23	76.7	23	76.7	
Non –veg how often	Daily	3	10.0	2	6.7	$\chi^2=2.490$ P=0.646
	Weekly once	14	46.7	17	56.7	
	Once in a week	4	13.3	4	13.3	
	Once in month	2	6.7	0	0	
If vegetarian How often – fried items, sweets	Daily	0	0	0	0	$\chi^2=2.333$ P= 0.211
	Weekly once	5	16.7	7	23.3	
	Once in a week	2	6.7	0	0	
	Once in month	0	0	0	0	
Perform exercise	Yes	8	26.7	11	36.7	$\chi^2=0.6393$ P=0.005
	No	22	73.3	19	63.3	
If yes type of exercise	Walking	4	13.3	7	23.3	$\chi^2=1.038$ P= 0.792
	Jogging	1	3.3	1	3.3	
	Cycling	3	10.0	3	10.0	
How often you will perform exercise	Once daily	1	3.3	2	6.7	$\chi^2=.953$ P= 0.813
	Twice daily	3	10.	3	10.0	
	Twice weekly	4	13.3	6	20.0	
What is the use of curry leaves in your food	Good for eye sight	12	40.0	14	46.7	$\chi^2=.271$ P= 0.602
	Good for hair	18	60.0	16	53.3	
	Good for DM	0	0	0	0	

* Significant--- $p \leq 0.05$

** Highly Significant-- $p \leq 0.001$

*** Very highly significant- $p \leq 0.0001$

The above table 4.1 reveals that most of the Type II Diabetic Patients 63.3%(19) were in the **age group** of 51-60 years, and 16.7% (5) were in 41-50 years in experimental group and 40.0%(12) were in 51-60 years and 40.0% (10) were in 41-50 years in the control group .

Majority of them were **females** 70%(21) in experimental and 60 % in control group .

On the basis of **educational status** 10(33.3%) were educated up to primary in experimental group, 9(30.0%) were educated up to primary in control group.

On the basis of **occupation** majority of them were home makers 33.3%(10) in experimental and 30%(9) in control group.

By considering their **dietary habits** in both groups the % of vegetarian and non-vegetarian are equal - 23(76.7%),7(23.3%) respectively.

According to the **non-vegetarian diet**, there were 14(46.7%) taking non-vegetarian diet weekly once in experimental group, 17(56.7%) taking non-vegetarian diet weekly once in control group.

Regarding the **type of exercise** 4(13.3%) were doing walking, 3(10.0%) were doing cycling in experimental group, 7(23.3%) were doing walking, 3(10.0%) were doing cycling in control group.

On the basis of **frequency of exercise**, 4(13.3%) were doing twice weekly in experimental group, 6(20.0%) were doing twice weekly in control group.

By considering the **use of curry leaves in diet**, 12(40.0%) told that it was good for eye, 18(60.0%) told that it was good for hair, in experimental group, 14(46.7%) told that it was good for eye, 16(53.3%) told that it was good for hair , in control group.

Table 4.2 Clinical variables of Type II Diabetic clients

Clinical variables		Control group		Experimental group		Chi square
		frequency	in%	frequency	in%	
Family history	Yes	8	26.7	13	43.3	X ² =1.832 P=0.1
	No	22	73.3	17	56.7	
Relationship	Father	5	16.7	7	23.3	X ² =1.974 P=0.37
	Mother	3	10	6	20	
Duration	<1 year	0	0	1	3.3	X ² =1.034 P=0.59
	2-3 years	15	50	15	50	
	4-5 years	15	50	14	46.7	
Symptoms	Giddiness	1	3.3	2	6.7	X ² =3.861 P=0.14
	Excessive thirst	2	6.7	7	23.3	
	Not known	27	90	21	70	
Duration of treatment	< 1 year	15	50	8	26.7	X ² =10.165 P=0.006
	2 – 3 years	0	0	8	26.7	
	4 – 5 years	15	50	14	46.7	
Regular treatment	Yes	30	100	27	90	X ² =3.158 P=0.076
	No	0	0	3	10	
Type of treatment	Allopathic	30	100	30	100	Constant Value
Medication	Metformin	9	30	10	33.3	X ² =0.253 P=0.96
	Daonil	7	23.3	7	23.3	
	Glimipride	3	10	2	6.7	
	Glipizide	11	36.7	11	36.7	
Symptom of low sugar	Giddiness	6	20	7	23.3	X ² =0.393 P=0.82
	Palpitation	16	53.3	17	56.7	
	Profuse sweating	8	26.7	6	20	
Complication	Eye problem	13	43.3	14	46.7	X ² =5.608 P=0.06
	Kidney problem	5	16.7	0	0	
	Foot ulcer	12	40	16	53.3	

* Significant---p≤ 0.05

** Highly Significant--p≤ 0.001

*** Very Highly Significant--p≤0.0001

The above table 4.2 shows about the medical related information's of the study participants Majority of the Type II Diabetic Patients 73.3% (22) in experimental and 56.7% (17)in control group have no family history of Type II Diabetic mellitus.

Those with family history of Type II Diabetes mellitus 16.7% (5) in experimental and 23.3%(7) in control group, Father's have Type II Diabetic mellitus.

On the basis of duration of illness equal percentage of the clients 50.0%(15), were within 2-3 years and 4-5 years in experimental group. Half of them 50%(15) were between 2-3 years and 46.7%(14) were between 4-5 years and in control group.100% in experimental and 90% in control group study participants were on regular treatment.

All of the study participants in both group were following (100%) Allopathy treatment.

Majority of the participants in both group are taking Tab.Glipizide (36.7%) . Around 53.3% in experimental and 56.7% in control group clients are having palpitation symptom on hypoglycemic state.

When assessing the knowledge on awareness about complication of diabetes mellitus 100.0%(30) of the patients both in experimental and control group were aware of the complications.

According to them 43.3% in experimental and 46.7% in control group assumes that DM will cause eye complications. About 40% in experimental and 53.3% in control group assumes that DM will cause foot ulcers.

Table: 4.3 Comparison of The level of blood sugar among Type II Diabetic clients before and after the intervention in experimental group

S.NO	Blood sugar level	N	Mean	S.D	Student Paired t-test
1.	Pre test	30	204.90	91.2	t -3.437 df-29 p =-0.002 **
2.	Post test	30	183.50	66.3	

* Significant--- $p \leq 0.05$

** Highly Significant-- $p \leq 0.001$

*** Very Highly Significant-- $p \leq 0.0001$

The above table reveals that the blood sugar level in post assessment is reduced when comparing with the pre assessment of blood sugar level among Type II Diabetic client in experimental group. The mean score of pre assessment is 204.90 and post assessment is 183.50. this shows the hypothesis of the study was proved . the t value is 3.437 with $df=29$ and $p=0.002$. is statistically significant.

Table 4.4 comparison of the level of blood sugar among Type II Diabetic clients before and after the intervention in control group

S.NO	Blood sugar level	N	Mean	S.D	Student Paired t-test
1.	Pre test	30	170.83	12.54	t-0.75 df=29 p=0.462
2.	Post test	30	169.53	14.37	

The above table shows the blood sugar level in post assessment is not reduced when comparing with the pre assessment of blood sugar level among Type II Diabetic client in control group. The mean score of pre assessment is 169.53 and post assessment is 170.83. the $p=0.4$ and it is statistically not significant.

Table 4.5 comparison of blood sugar level in both experimental and control group

	Group	N	Mean	Standard Deviation	Student Paired t-test
Pretest	Experimental group	30	204.90	91.204	t=2.03 df=58 p=0.25
	Control group	30	170.83	12.540	
Post test	Experimental group	30	183.50	66.310	t= 1.13 df=58 p=0.04 *
	Control group	30	169.53	14.366	

* Significant--- $p \leq 0.05$

** Highly Significant-- $p \leq 0.001$

*** Very Highly Significant-- $p \leq 0.0001$

The above table shows the blood sugar level between experimental and control group. The post assessment of blood sugar reveals that there is a mark reduction in the mean value of blood sugar level in experimental group and the $p = 0.04$ is statistically significant ($t = 1.13$).

Table 4.6 Comparison of pretest & post test blood sugar level among Experimental and Control group

Group	N	Pretest Mean \pm SD	Posttest Mean \pm SD	Student Paired t-test
Experimental Group	30	204.90 \pm 91.20	183.50 \pm 66.31	t-3.44,df=29 p=0.002 **
Control Group	30	170.83 \pm 12.54	169.53 \pm 14.366	t-0.75,df=29 p=0.46

The above table reveals the mean and SD between the experimental and control group blood sugar level. In Experimental group the value in pre test is 204.90 ± 91.20 , and in post test it is 183.50 ± 66.31 . In Control group the value in pre test is 170.83 ± 12.54 and in post test it is 169.53 ± 14.366 . The $p = 0.002$ ($t = 3.44$) in experimental shows the result was statistically significant.

Table 4.7 Score of post test blood sugar level among Type II Diabetic clients in both experimental and control group

Score	Control group		Experimental group		Chisquare
	N	%	N	%	
No decrease	20	66.7	0	0	Chi- 30.1 P=0.001 **
Decrease >10	4	13.3	13	43.3	
Decrease 10-19	4	13.3	10	33.3	
Decrease Above 20	2	6.7	7	23.3	

* Significant--- $p \leq 0.05$

** Highly Significant-- $p \leq 0.001$

*** Very Highly Significant-- $p \leq 0.0001$

Table above table shows the decrease level of blood sugar levels in both experimental and control group. Among this there is about 66.7 % in control group comes under no decrease blood sugar level. About 23.3% of study participant's blood sugar level reduced above 20mg in experimental group. About 33.3% of participant's blood sugar level reduced between 10-19mg in experimental group. The analysis was done with Chi square test and the value is Chi- 30.1 (P=0.001) and it is <0.05 it is statistically significant.

Table 4.8: Mean difference of effectiveness of curry leaves

Group	N	Mean difference	Standard deviation	Paired t test
Experimental Group	30	21.40	34.10	t-3.12 df=58 p=0.003 **
Control Group	30	1.3	9.56	

* Significant--- $p \leq 0.05$

** Highly Significant-- $p \leq 0.001$

*** Very Highly Significant-- $p \leq 0.0001$

The above table shows that there is mean difference of 21.40 when comparing the pre and post assessment of blood sugar level in experimental group and the mean difference is only 1.3 in control group blood sugar level reduction. Thus the hypothesis of this study was proved.

Table 4.9 Effectiveness of the study in % (with 95% confidence interval)

Group	Assessment	Mean score	Mean difference	Mean difference With 95% CI
Experimental group	Pretest	204.90	21.4 (8.94—33.86)	10.44% (4.361%-16.53%)
	Post test	183.50		
Control group	Pre test	170.83	1.3 (-2.2—4.8)	0.76% (-1.29%--2.81%)
	Post test	169.53		

The above table shows the effectiveness of the study in 95% CI , it reveals that the effectiveness of curry leaves in reducing blood sugar level is high among the experimental group than the control group. The mean difference is 21.4 and it is 10.44% In 95 % CI.

Table 4.10 Association between level of blood glucose reduction and the clinical variables in experimental group

Variables		Reduction of blood sugar level						Total		Chi square
		<10		Between 10-19		>20				
		Frequecny	in %	Frequecny	in %	Frequecny	in %	Frequecny	in %	
Family H/O of D/M	Yes	5	16.700	4	13.30	4	13.3	13	43.30	X2=0.71
	No	8	26.700	6	20.00	3	10	17	56.70	P=0.70
Relationship	Father	2	6.700	2	6.70	3	10	7	23.30	x2=2.02
	Mother	3	10.000	2	6.70	1	3.3	6	20.00	P=0.73
Deration of illness	<1 Yesr	0	0.000	1	3.30	0	0	1	3.30	X2=4.19
	2 to 3 years	8	26.700	5	16.70	2	6.7	15	50.00	P=0.005
	4 to 5 years	5	16.700	4	13.30	5	16.7	14	46.70	**
Symptoms	Giddiness	0	0.000	0	0.00	2	6.7	2	6.70	X2=9.03
	Excessive hunger thirst	4	13.300	1	3.30	2	6.7	7	23.30	P=0.06
	not known	9	30.000	9	30.00	3	10	21	70.00	
Duration of illness	<1 year	2	6.700	6	20.00	0	0	8	26.70	X2=12.38
	2 to 3 years	6	20.000	0	0.00	2	6.7	8	26.70	P=0.015
	4 to 5 Years	5	16.700	4	13.30	5	16.7	14	46.70	**
Regular treatment	Yes	12	40.000	10	33.30	5	16.7	27	90.00	X2=3.87
	No	1	3.300	0	0.00	2	6.7	3	10.00	P=0.14
Type of treatment	Allopathy	13	43.300	10	33.30	7	23.3	30	100.00	Constant
Medication	Metformin	4	13.300	5	16.70	1	3.3	10	33.30	
	Dionil	4	13.300	2	6.70	1	3.3	7	23.30	X2=5.43
	Glimipride	0	0.000	1	3.30	1	3.3	2	6.70	P=0.4
	Glipizide	5	16.700	2	6.70	4	13.3	11	36.70	
Symptoms of low sugar	Giddiness	1	33.300	4	13.30	2	6.7	7	23.30	X2=7.0
	Papitation	7	23.300	6	20.00	4	13.3	17	56.70	P=0.13
	Profuse sweating	5	16.700	0	0.00	1	3.3	6	20.00	
Complecation	eye problem	6	20.000	6	20.00	2	6.7	14	46.70	X2=1.63
	Food ulcer	7	23.300	4	13.30	5	16.7	16	53.30	P=0.44

*Significant-- $p \leq 0.05$

**Highly significant-- $p \leq 0.001$

***Very highly significant-- $p \leq 0.0001$

Above table shows the association between the clinical variables and the reduction of blood sugar level in experimental group.

Less duration of illness and less duration of treatment for Diabetes mellitus are having more reduction in blood sugar level.

It reveals that in the duration of illness 2-3years ($X^2=4.19$, $P=0.005$) and according to the duration of treatment to the illness less than five years ($X^2=12.38$, $P=0.015$) are reduced more post prandial blood sugar level than others.

This study analysis revealed that there is a significant effect of curry leaves powder on reduction of blood sugar level among Type II Diabetic clients.

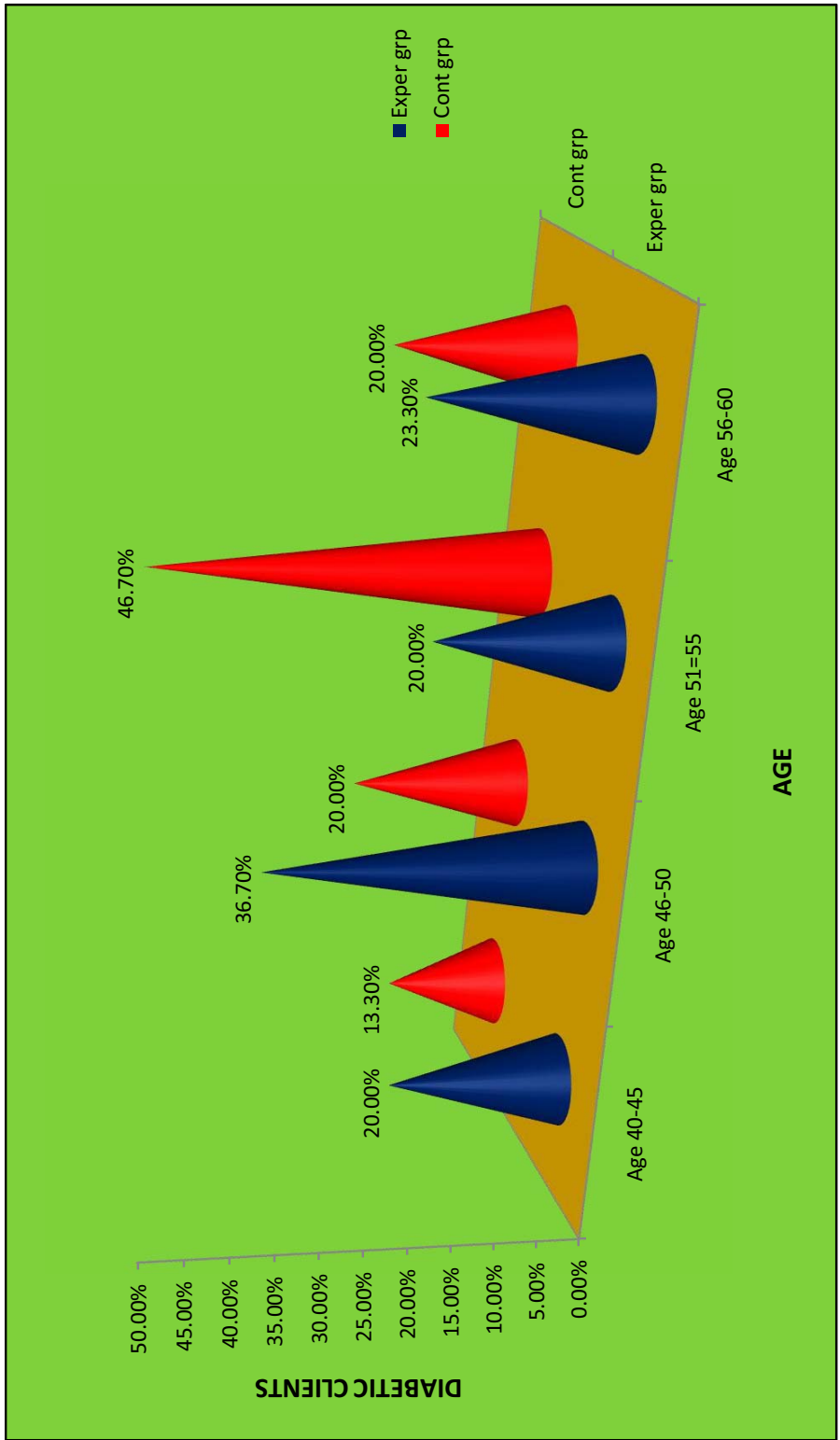


Figure 3: Age wise distribution of Diabetic clients

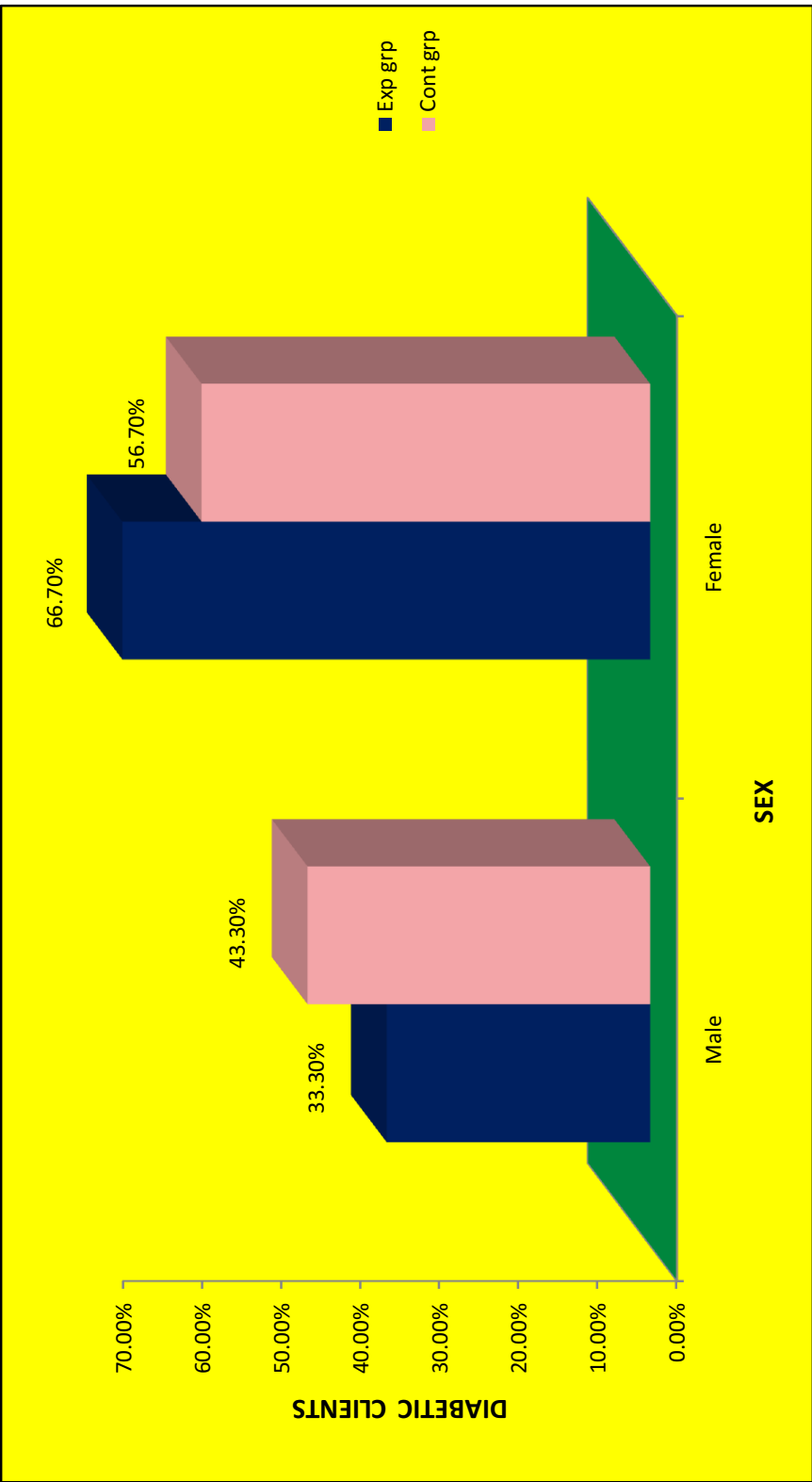


Figure 4: Gender wise distribution of Diabetic clients

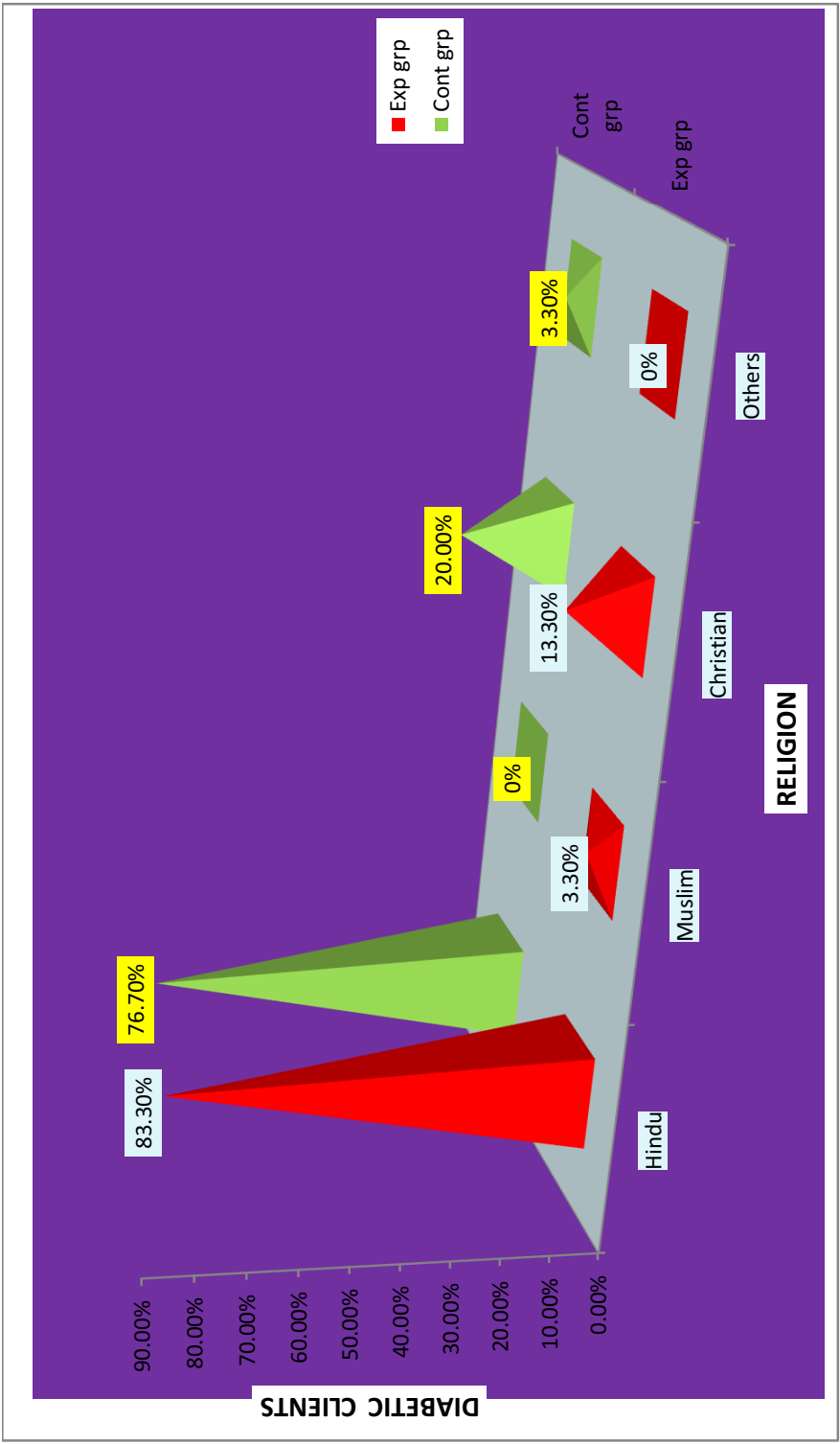


Figure 5: Religion wise distribution of Diabetic clients

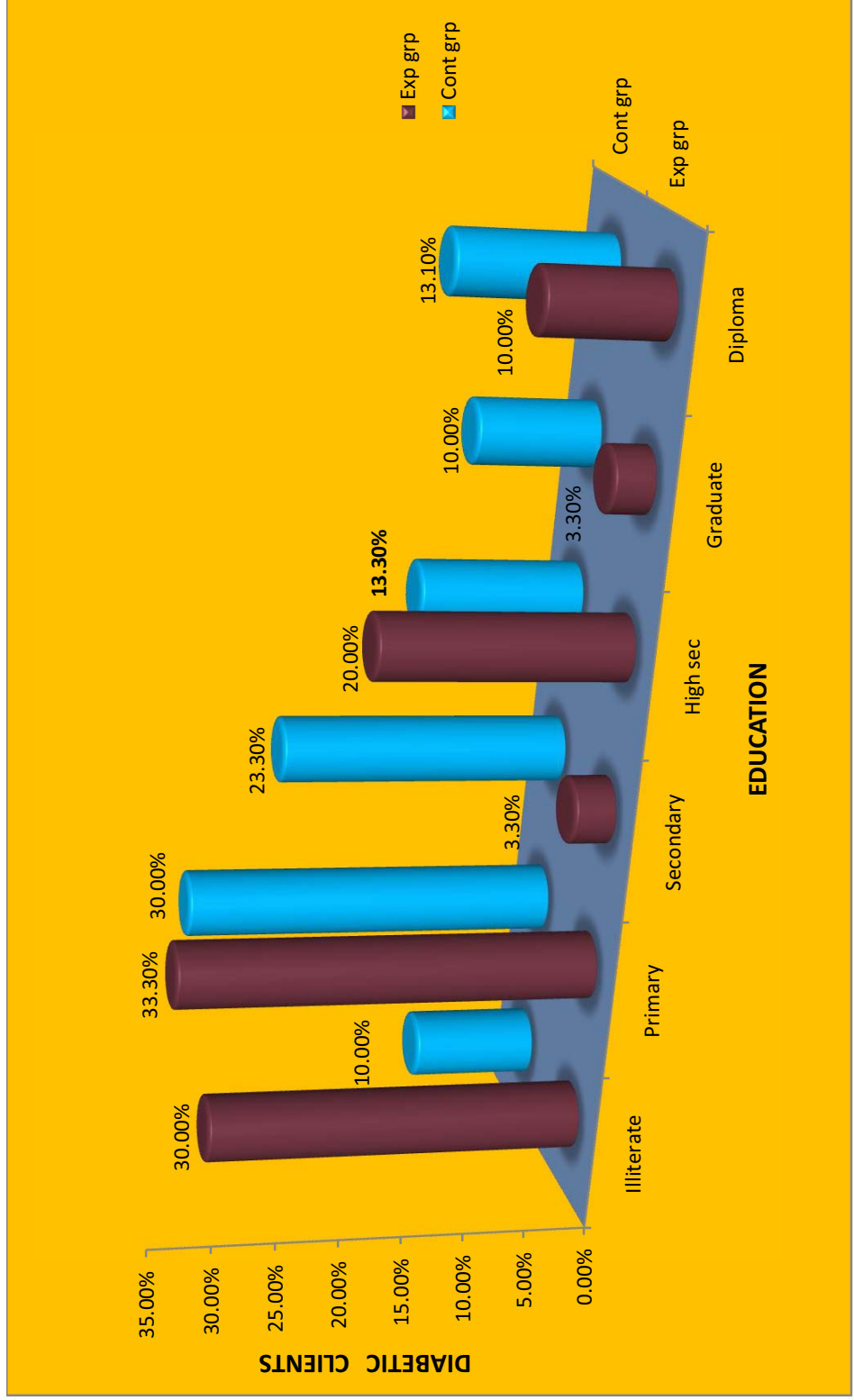


Figure 6: Education wise distribution of Diabetic clients

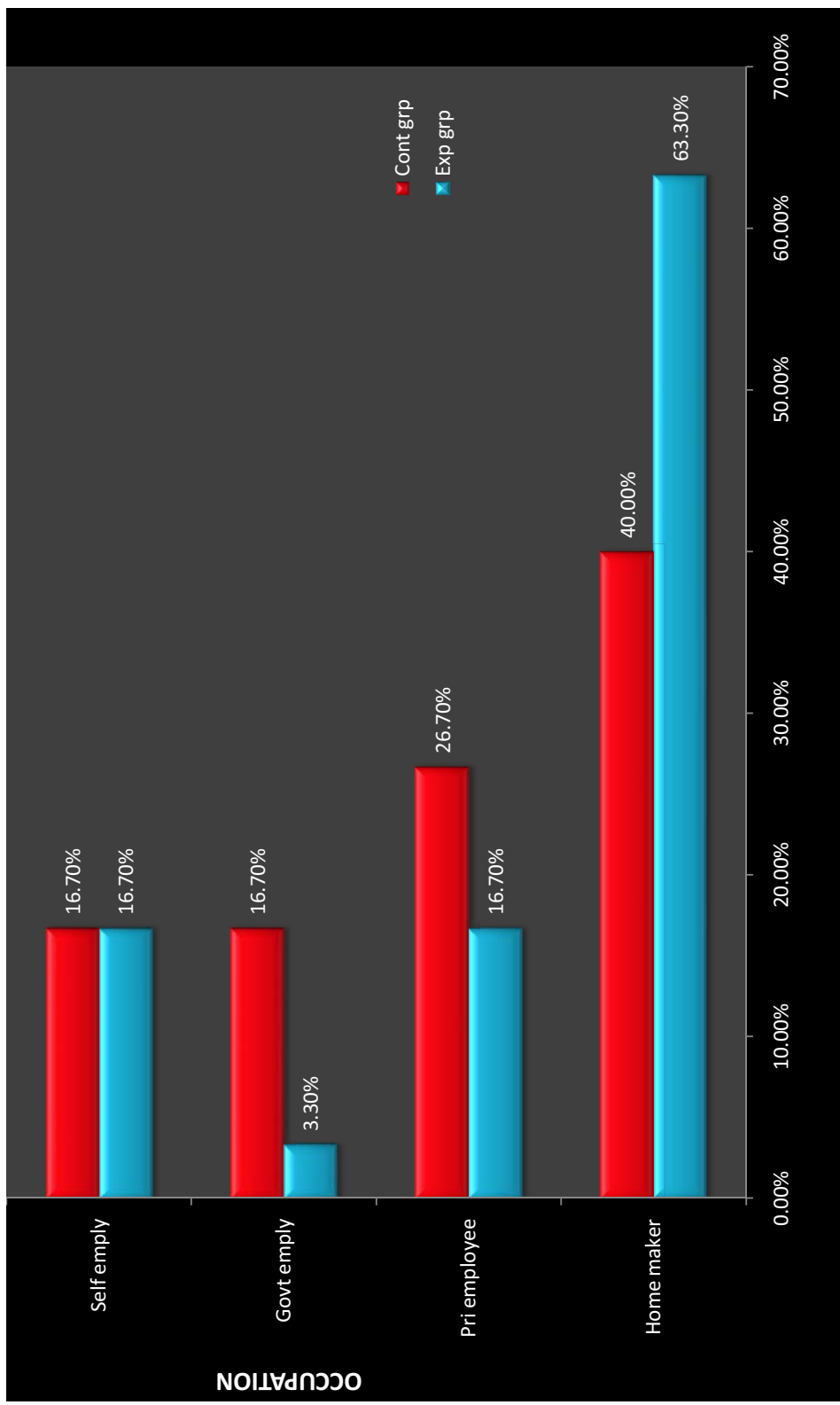


Figure 7: Occupation wise distribution of Diabetic clients

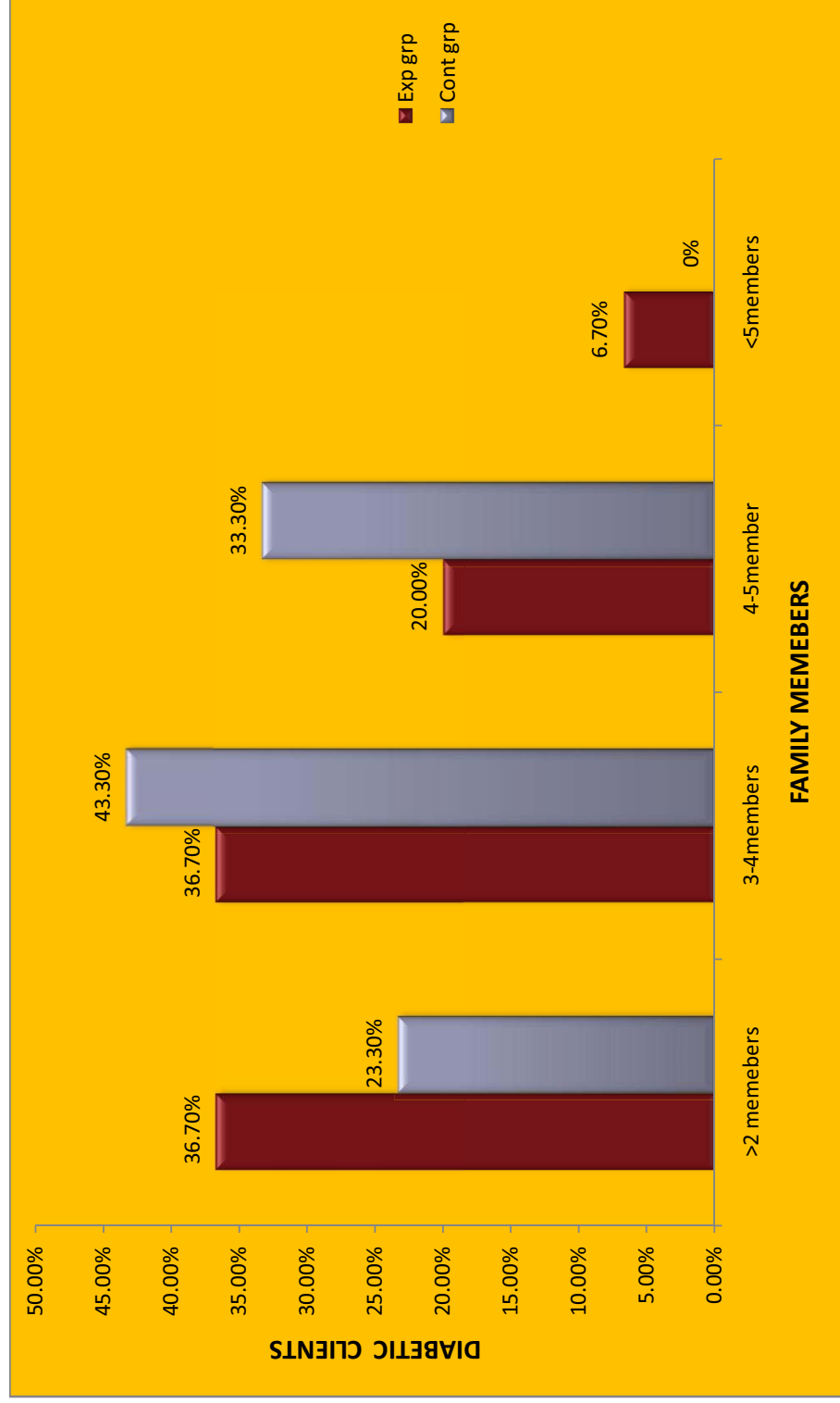


Figure 8: Family size of the study participants

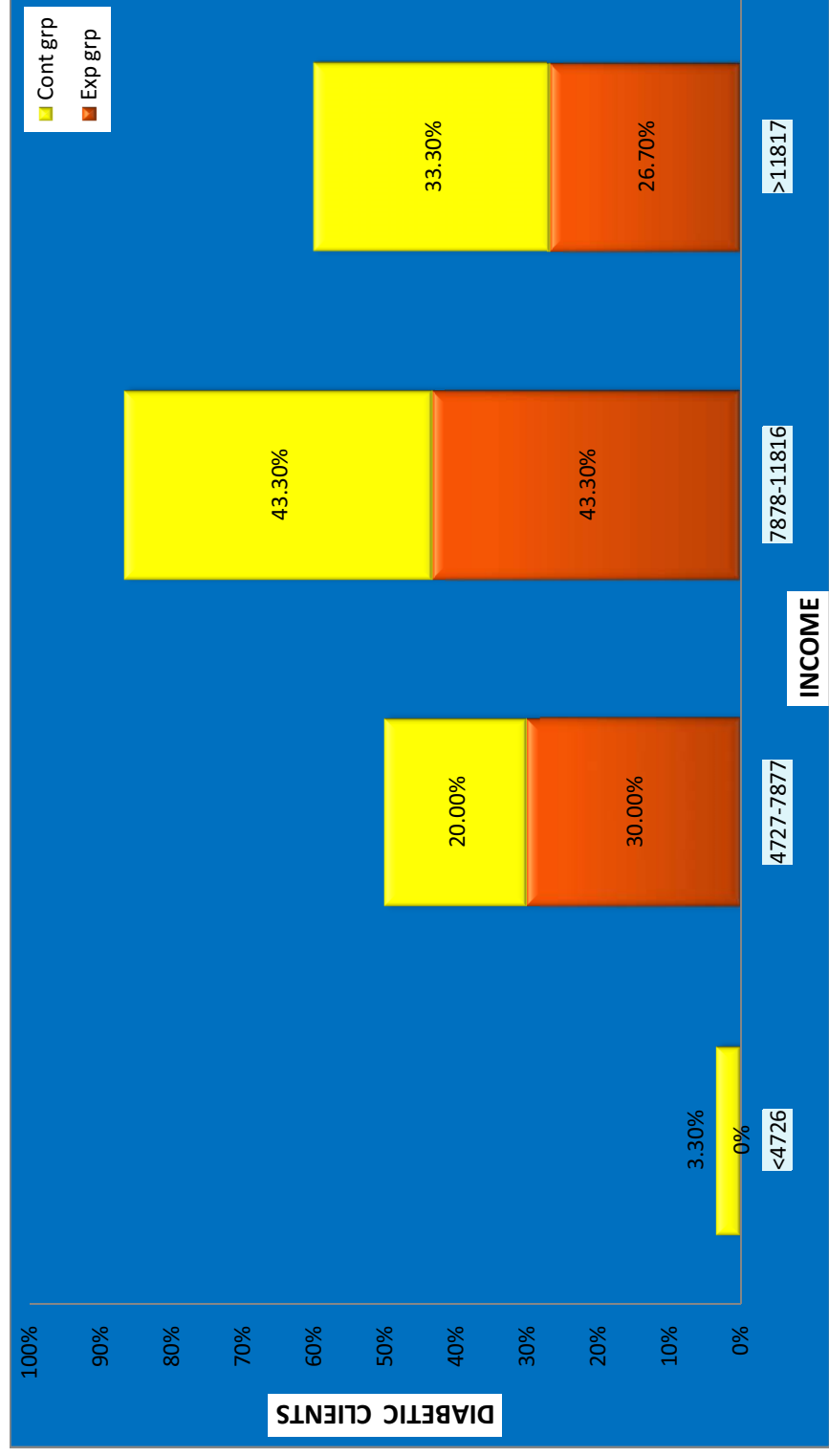


Figure 9: Income wise distribution of Type II Diabetic clients

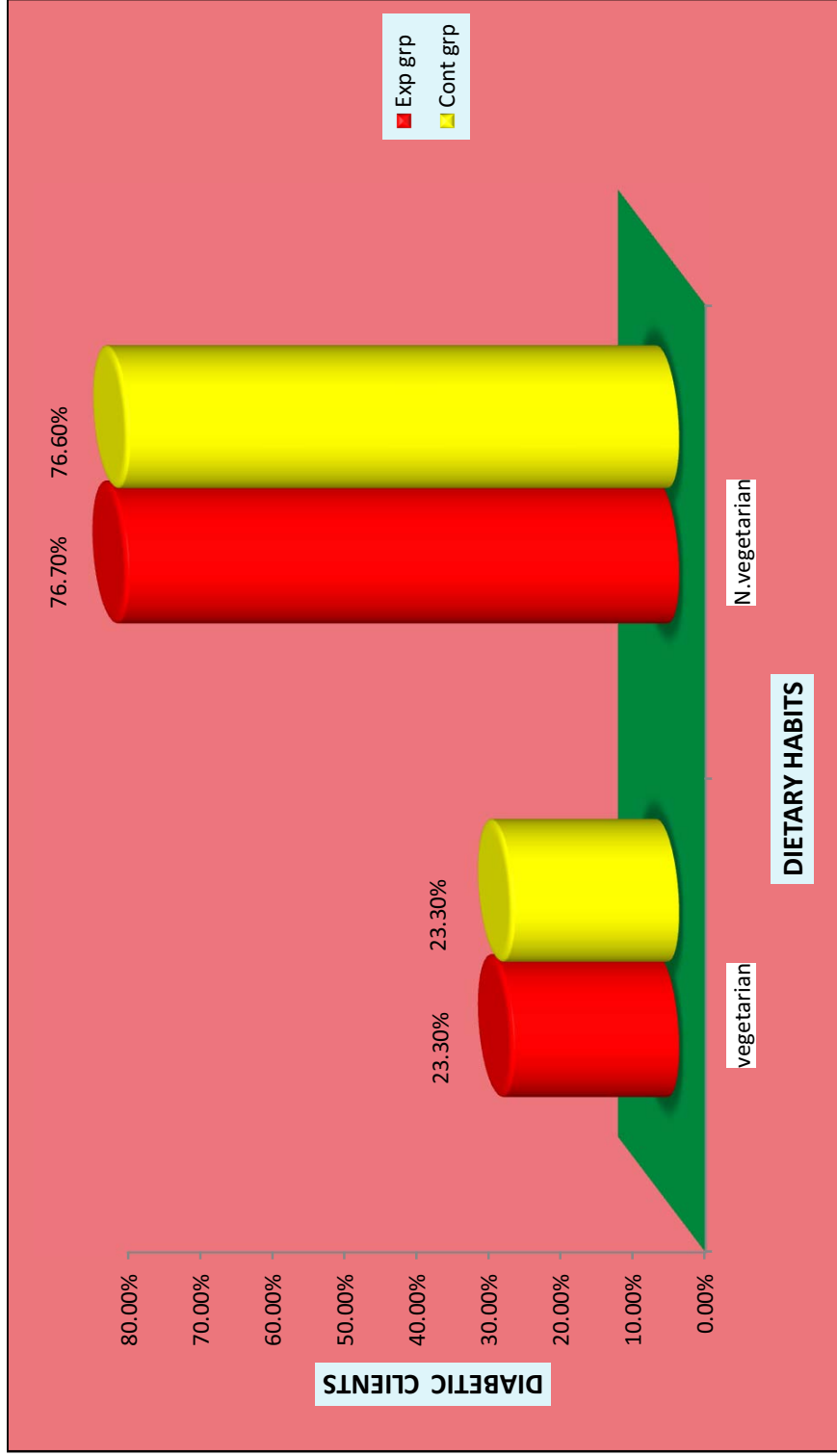


Figure 10: Dietary habit among study participants

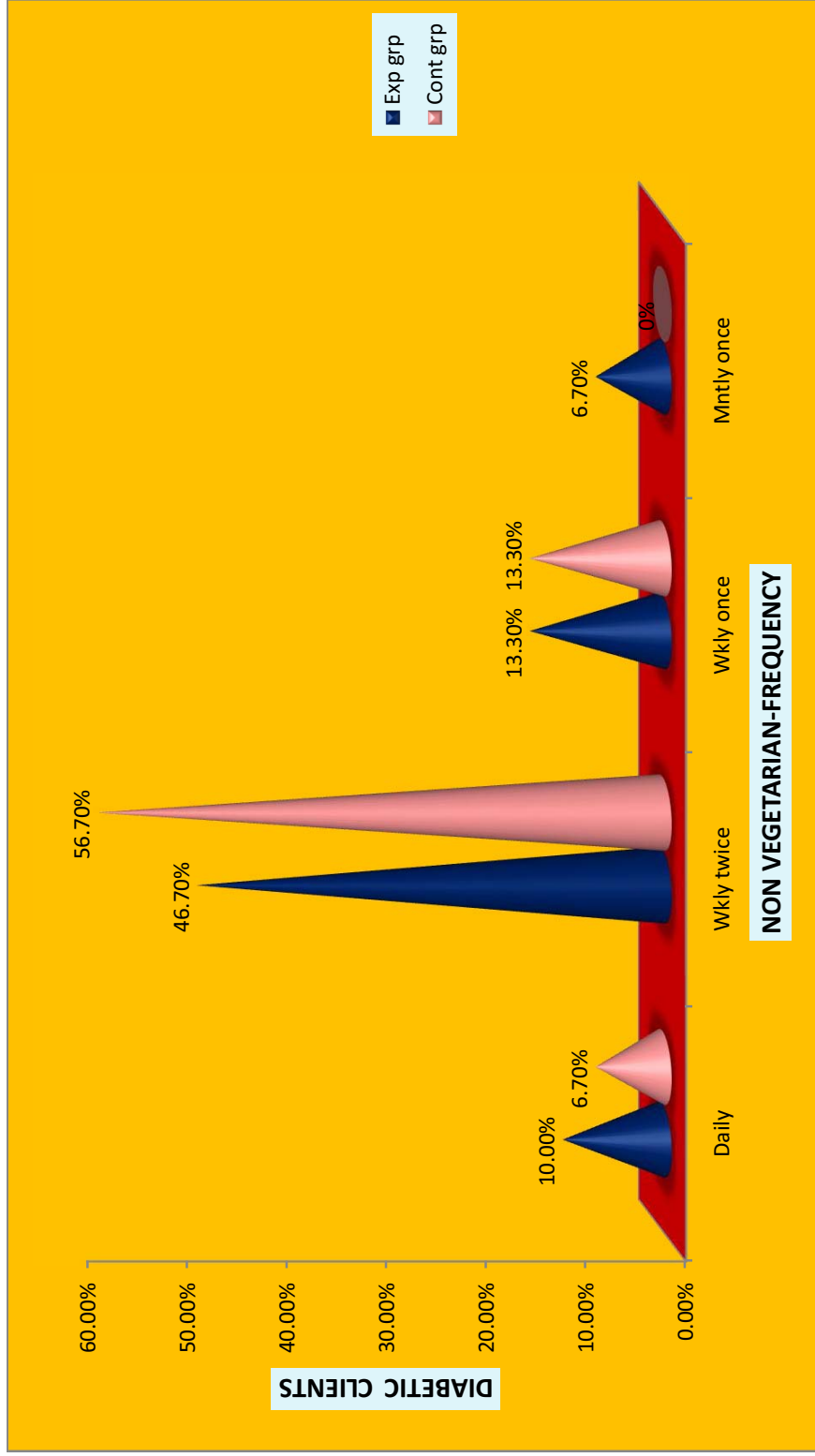


Figure 11: Frequency of non vegetarian among study participants

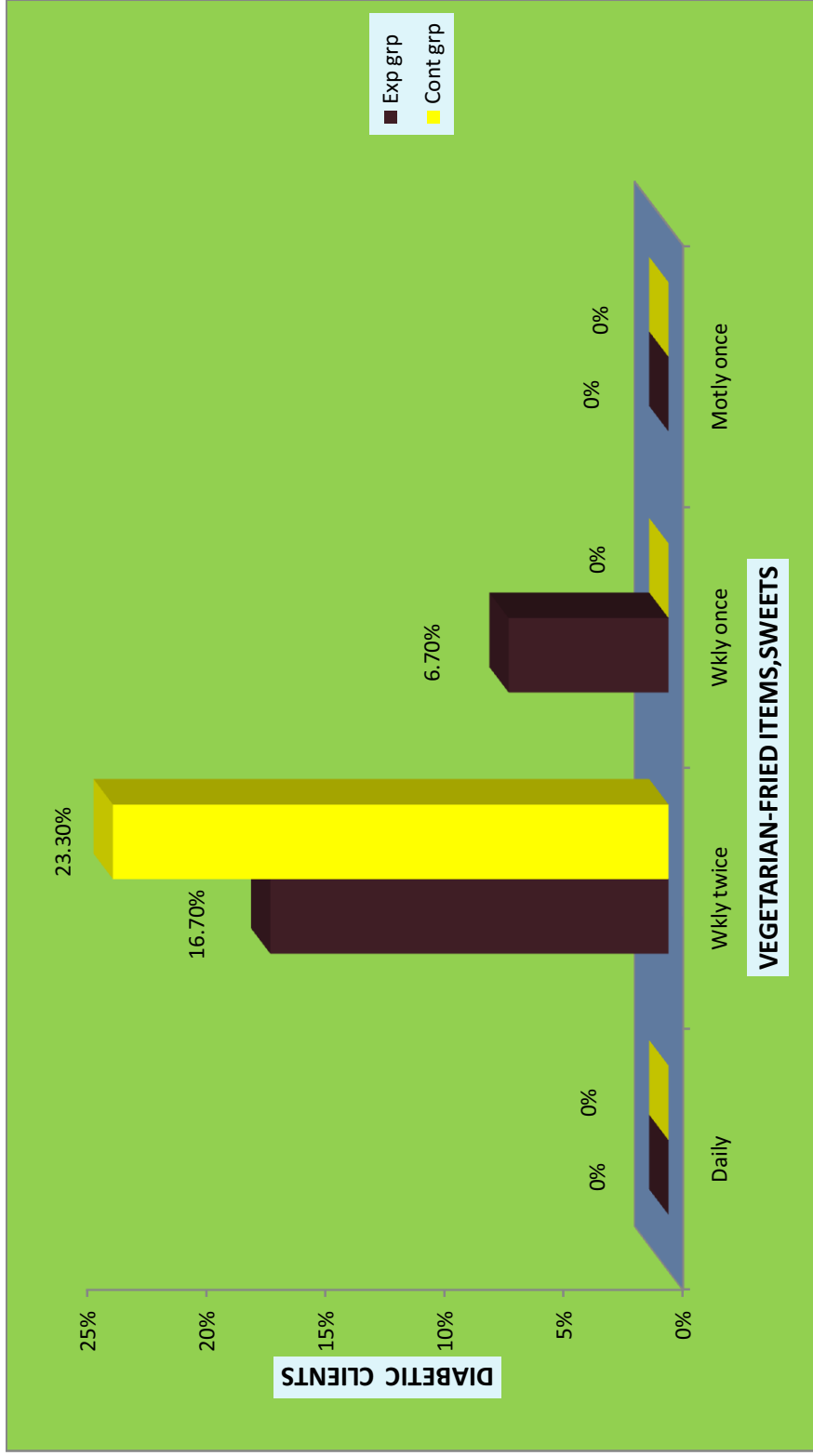


Figure 12: Frequency of fried items and sweets among study participants

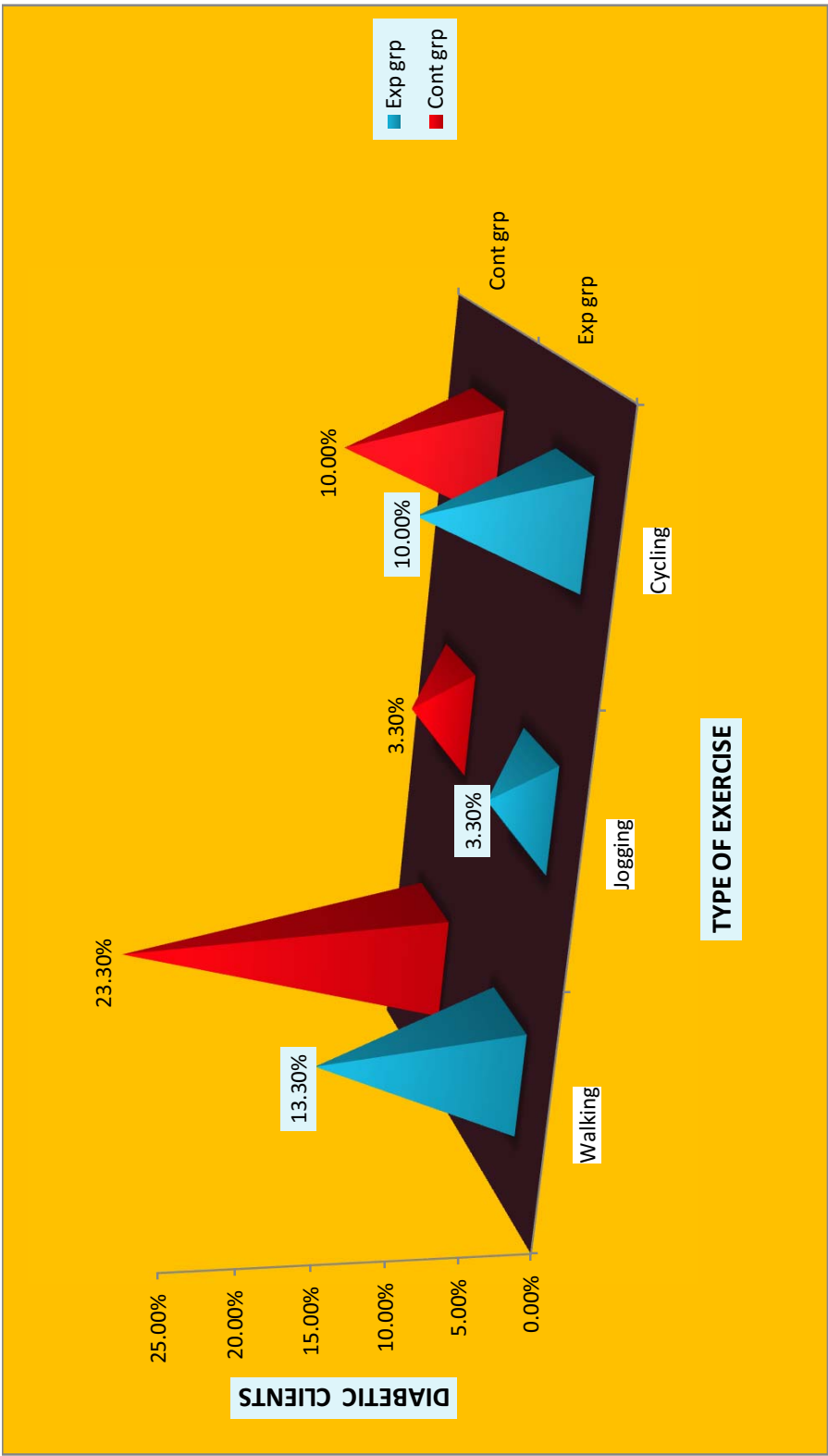


Figure 13: Type of exercises among study participants

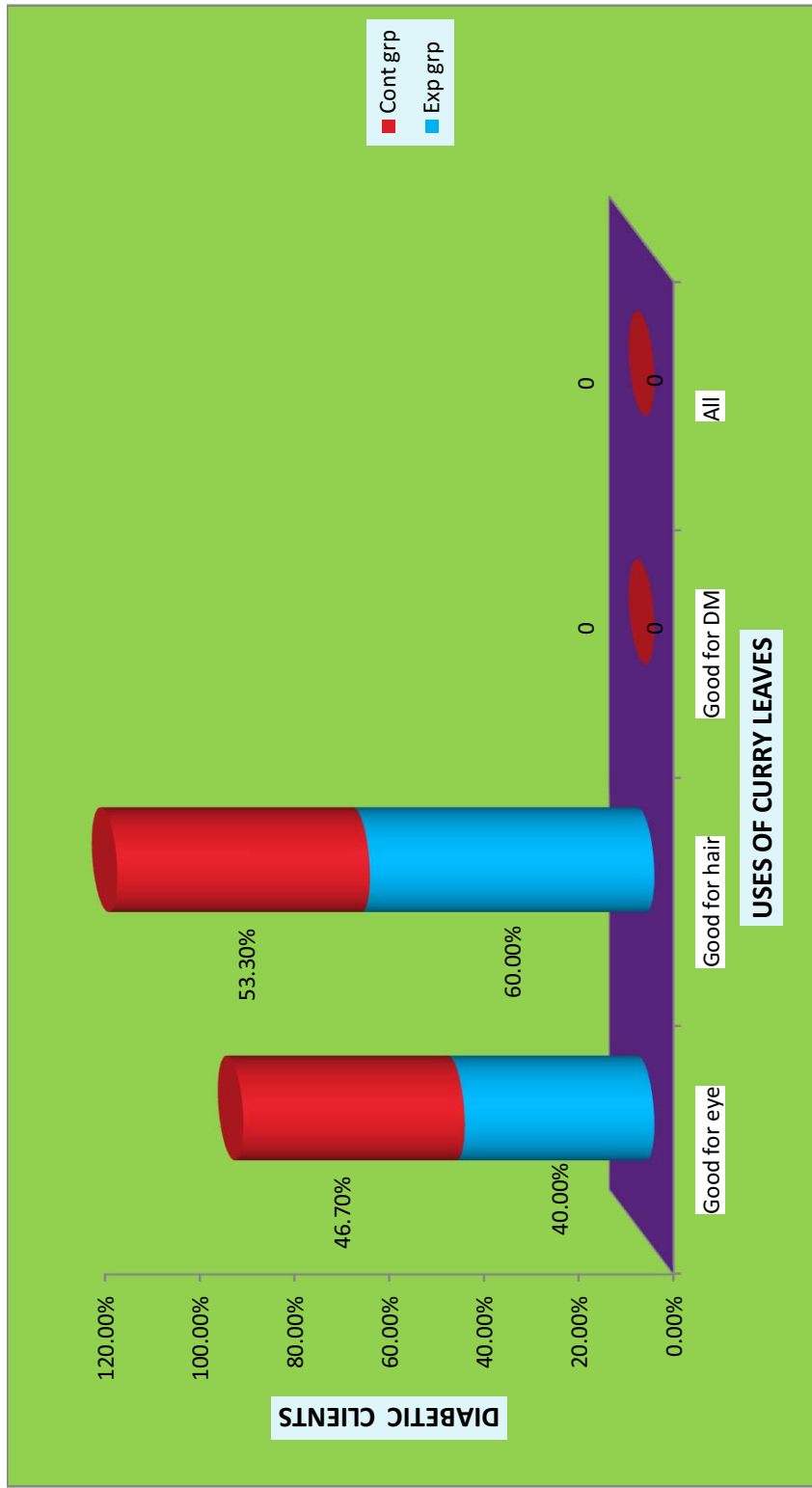


Figure 14: Uses of curry leaves by the study participants

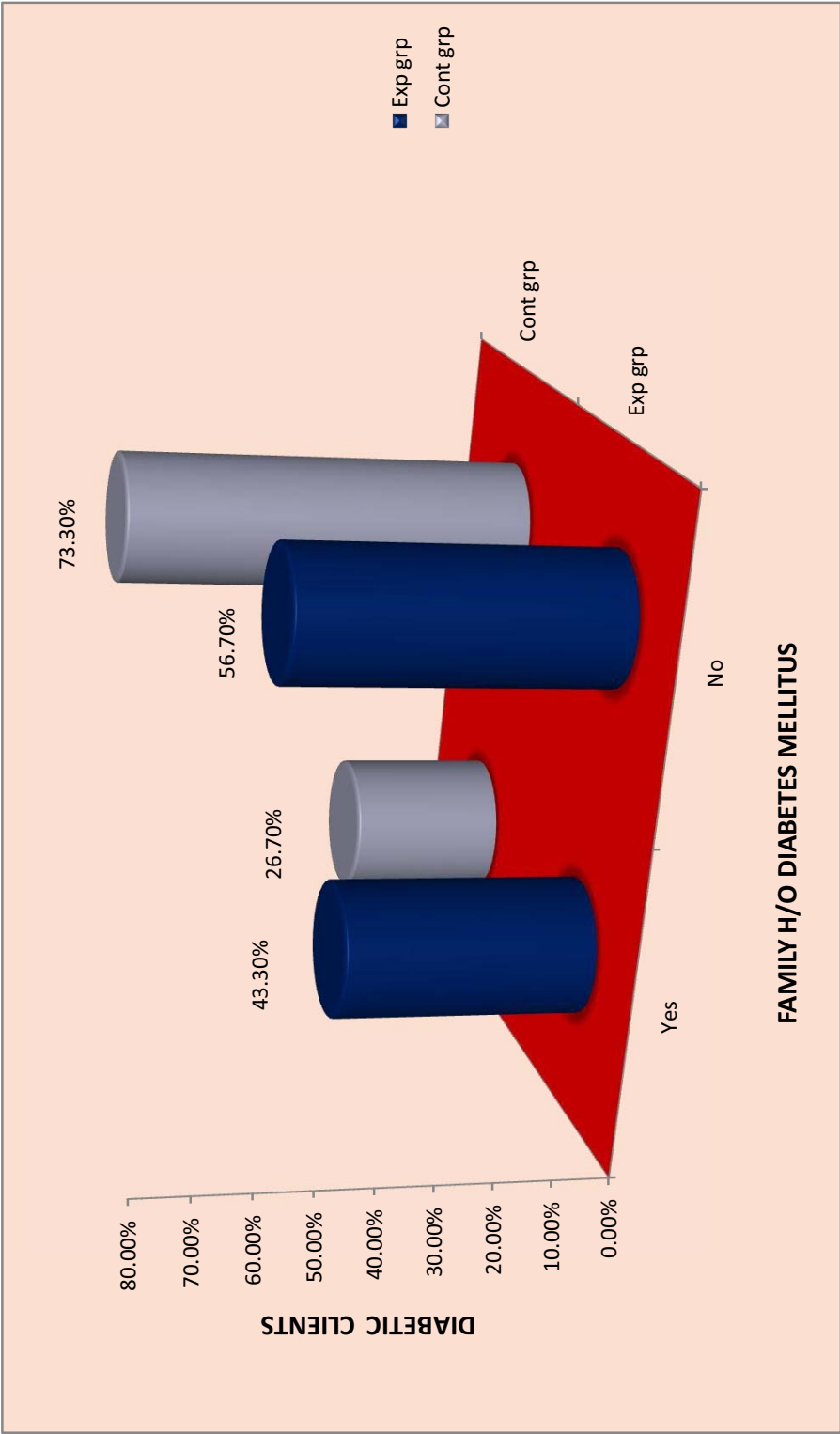


Figure 15: Family history of Diabetes mellitus among study participants

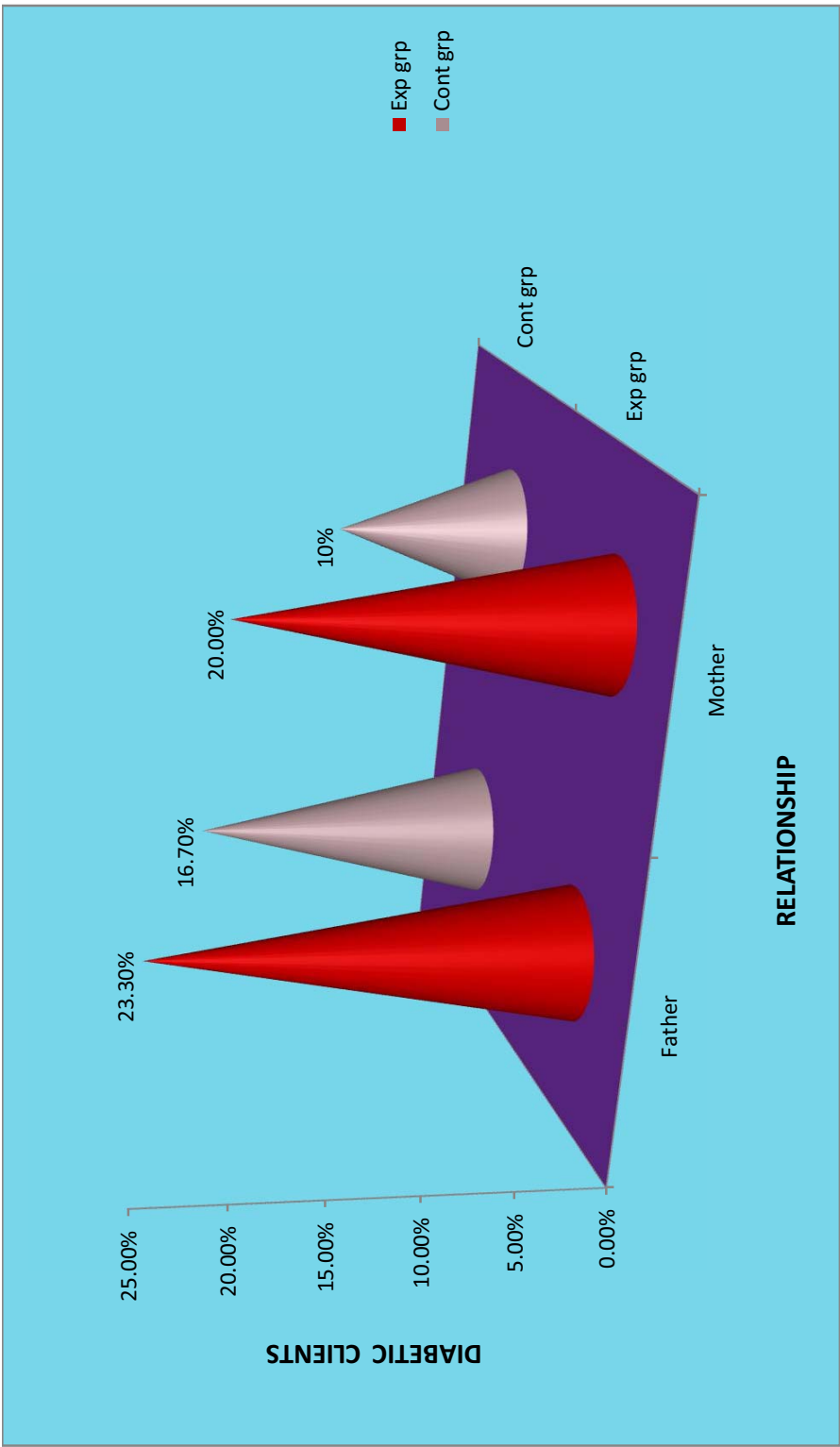


Figure 16: Relationship of family members having same disease

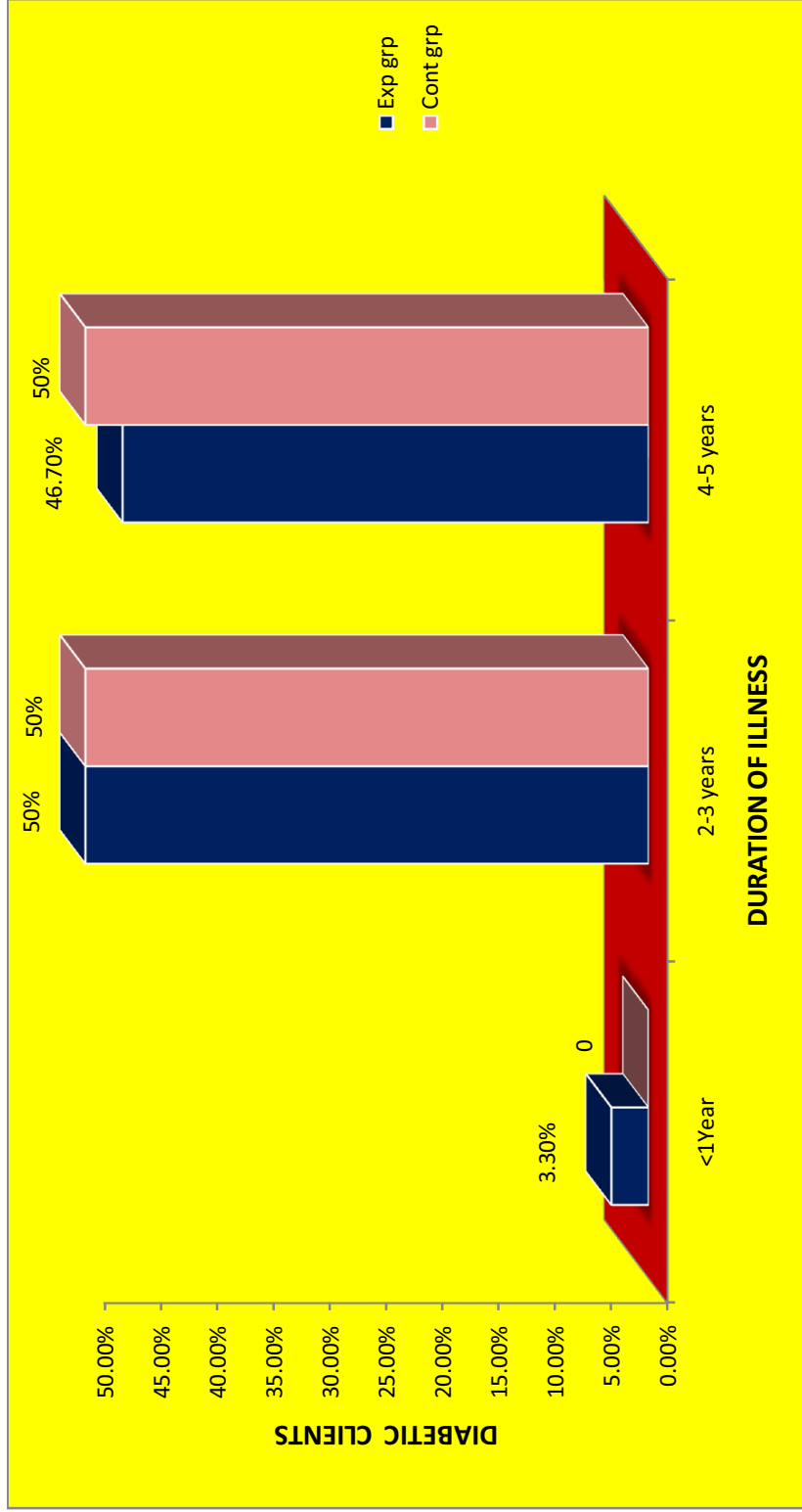


Figure 17: Distribution of duration of diabetes mellitus

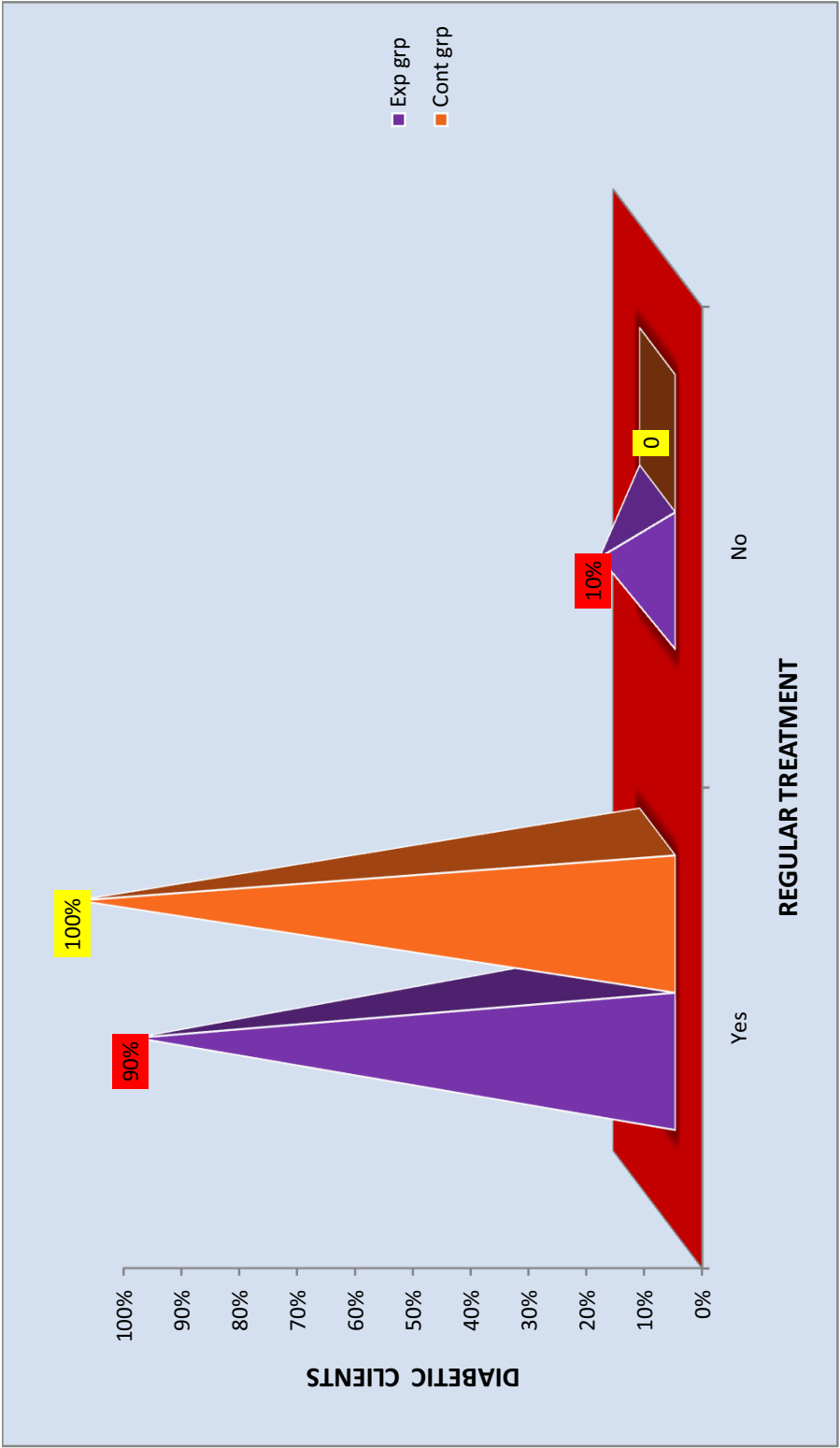


Figure 18 :Treatment pattern of study participants

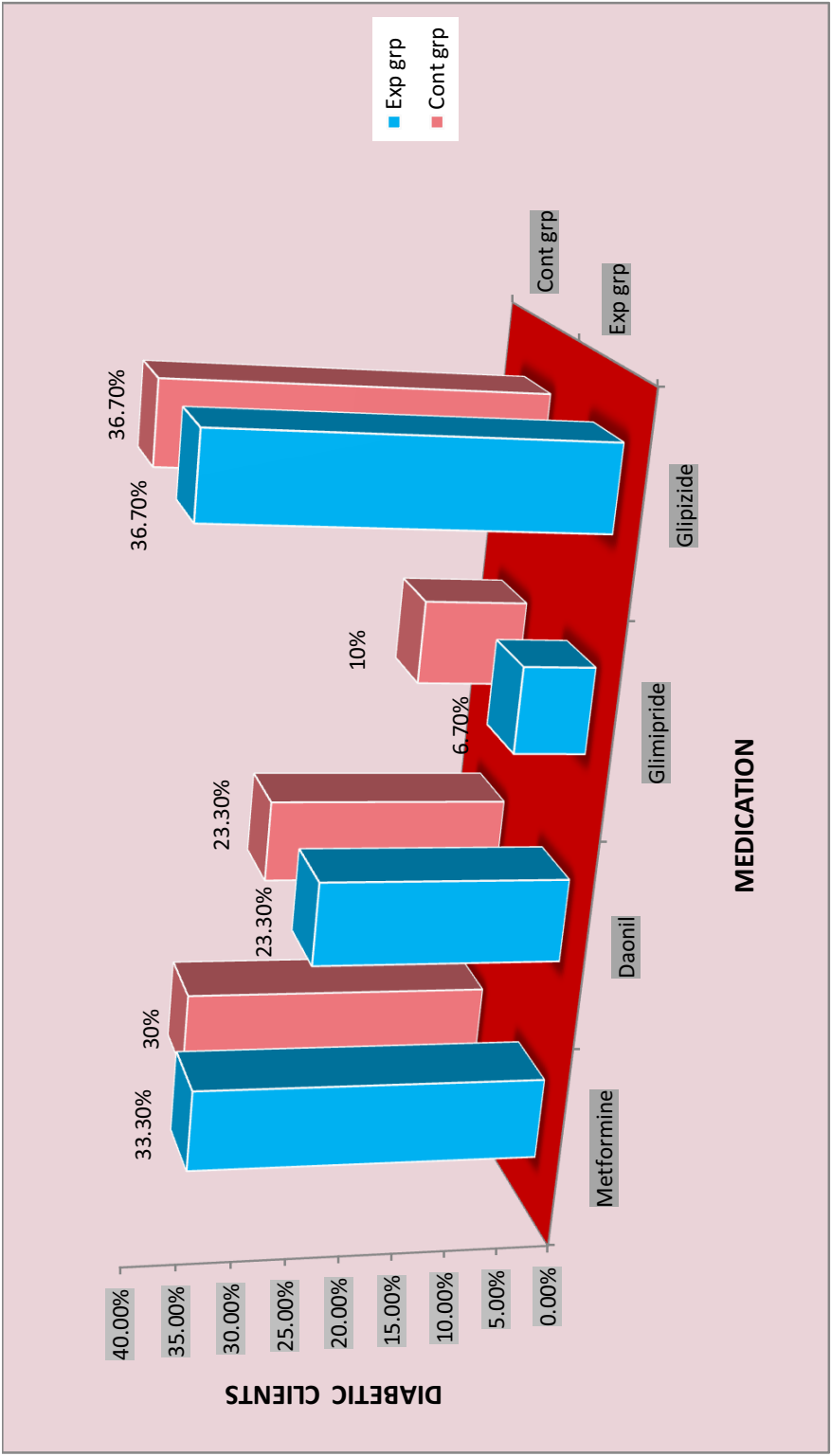


Figure 19: The type of medications used by the participants

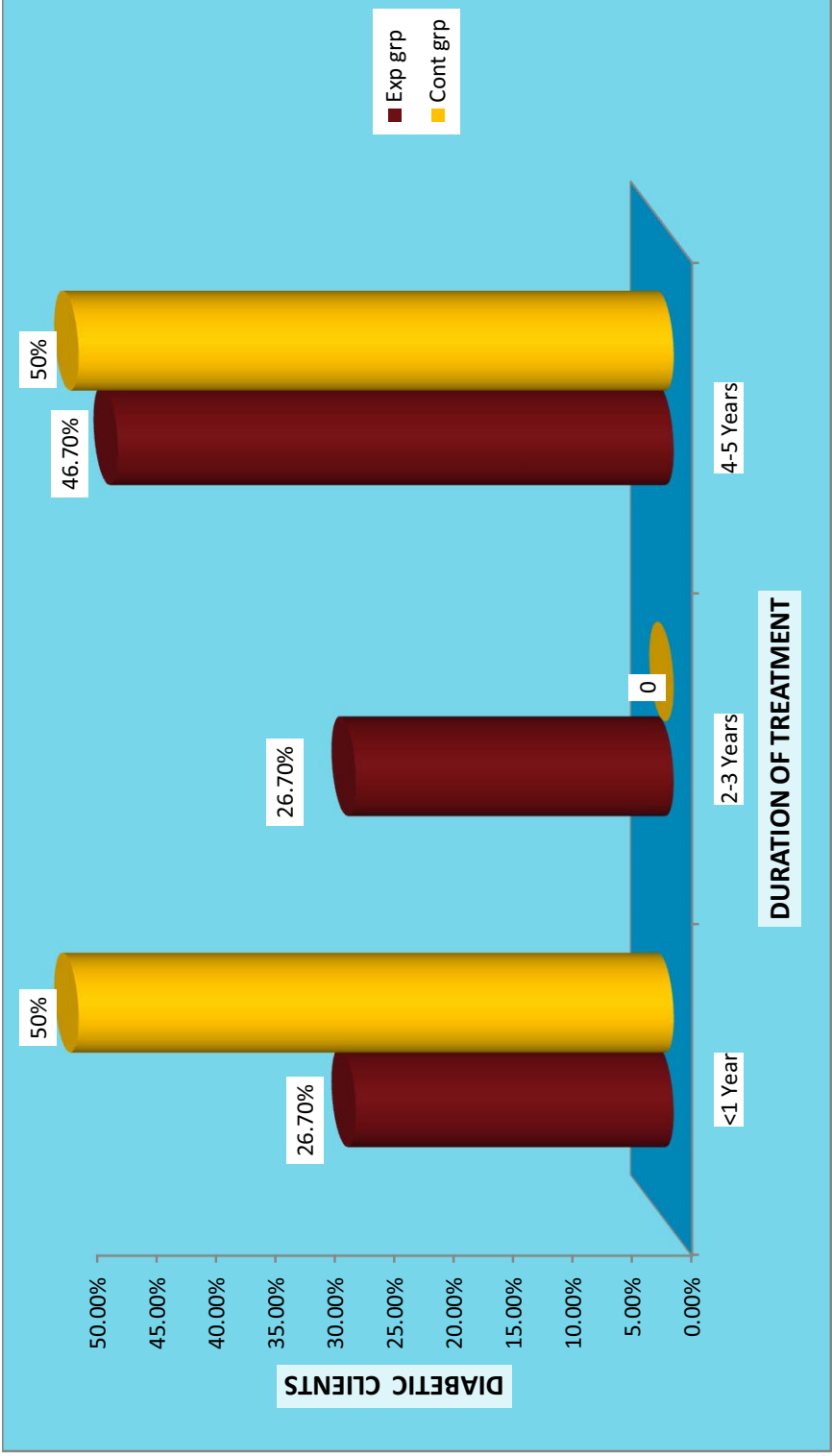


Figure 20: The duration of treatment

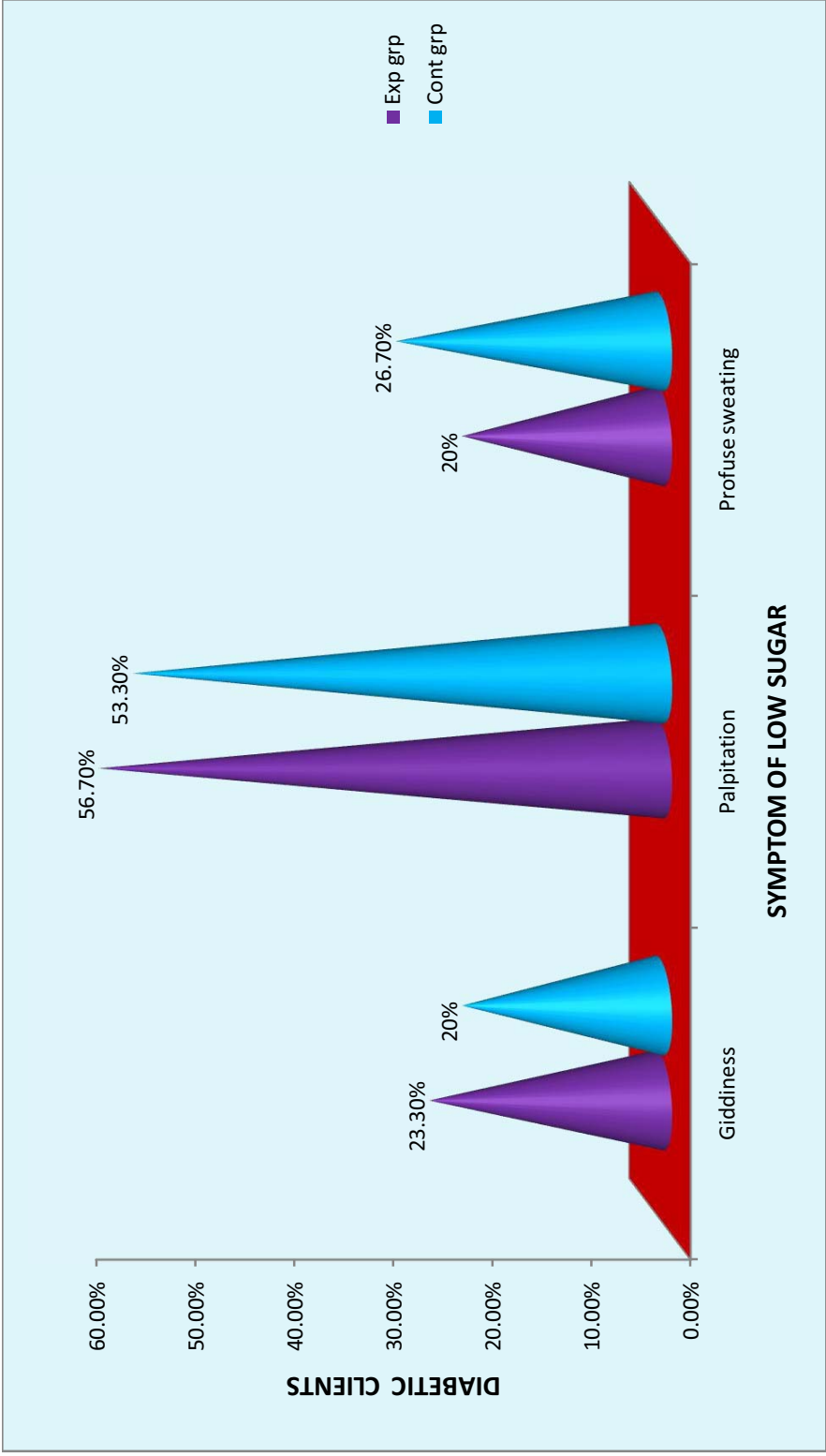


Figure 21: Clients awareness about the symptom of low blood sugar level

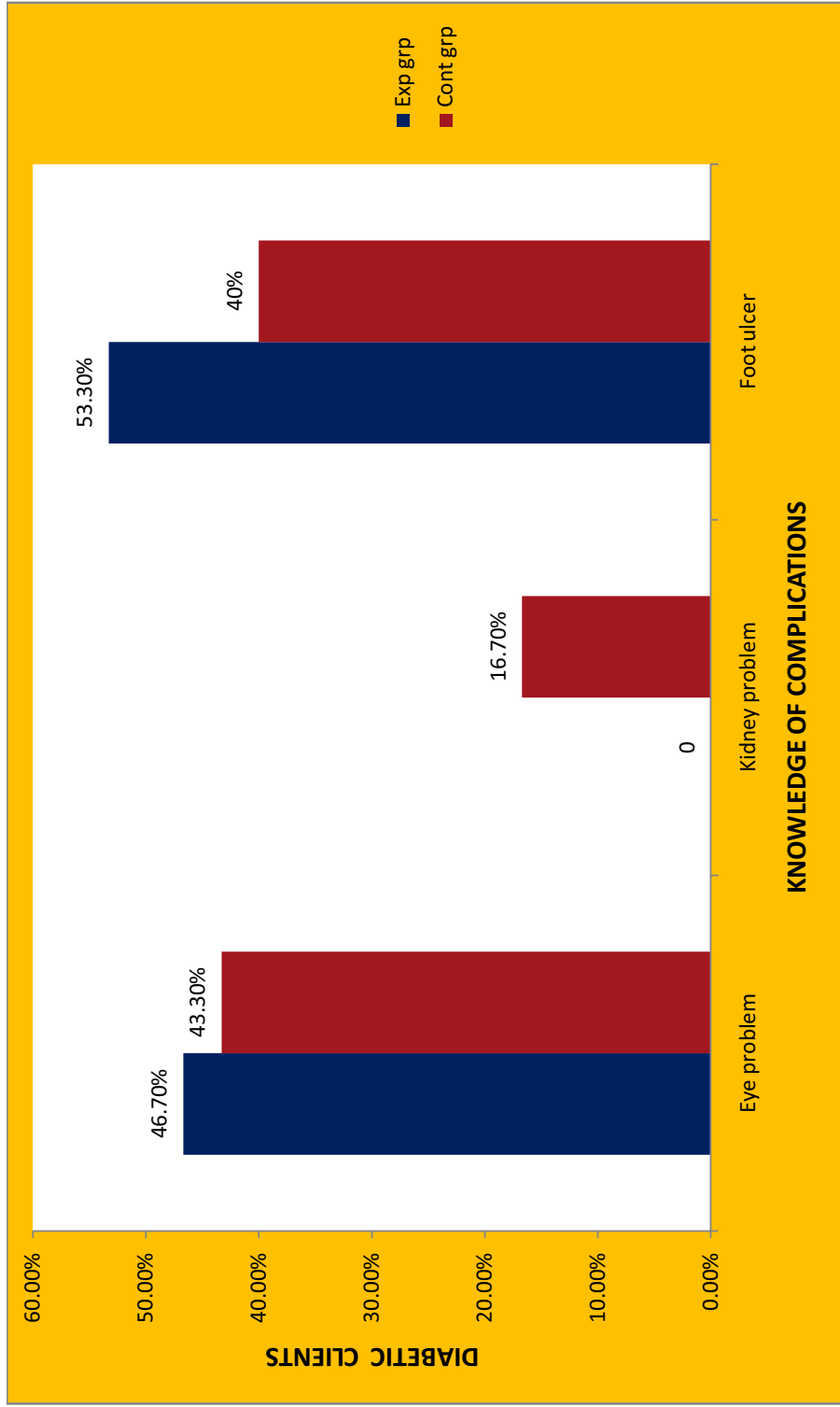


Figure 22: The Client's knowledge on complications of diabetes

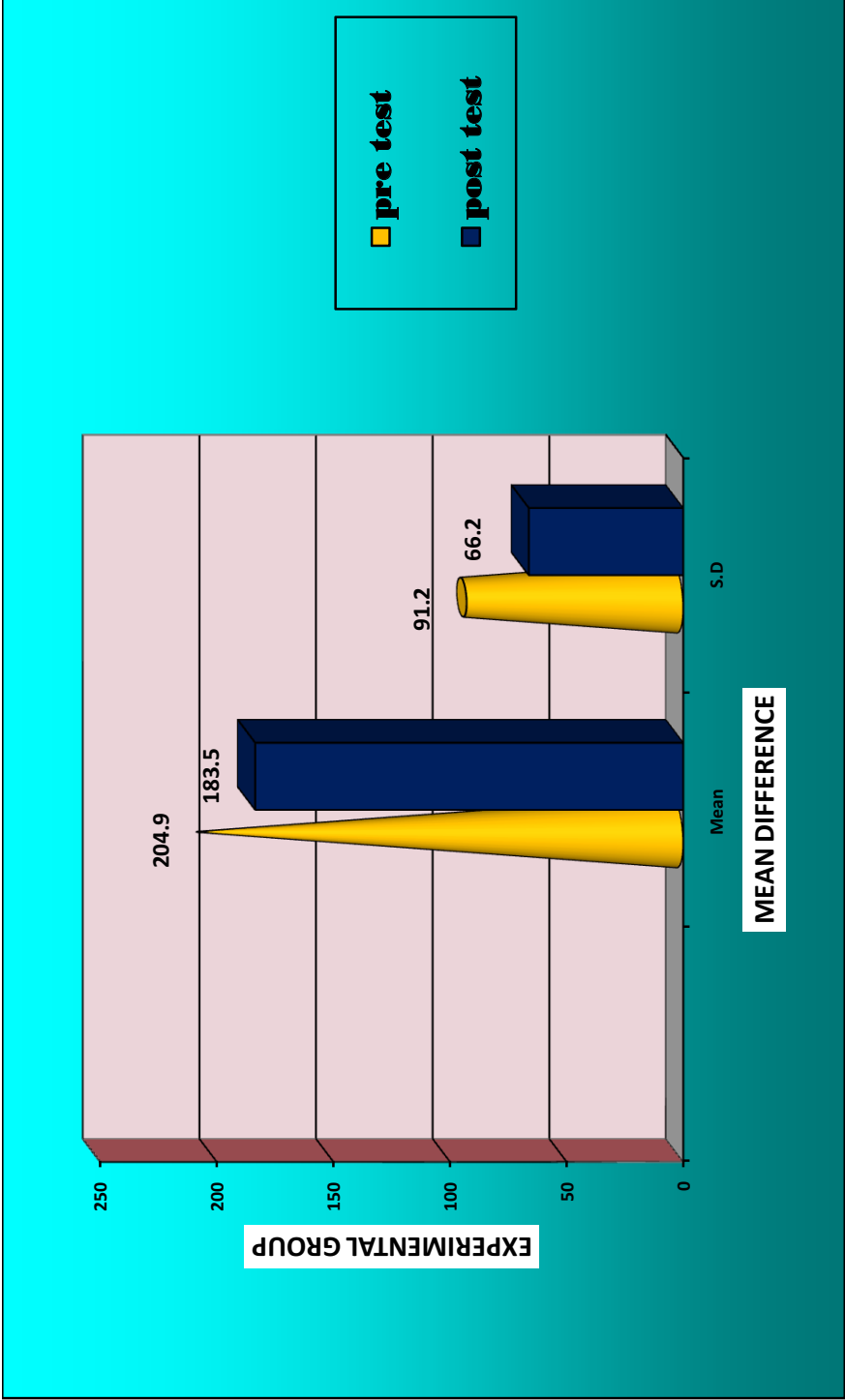


Figure23: The mean value of blood sugar level in pre and post assessment in experimental group

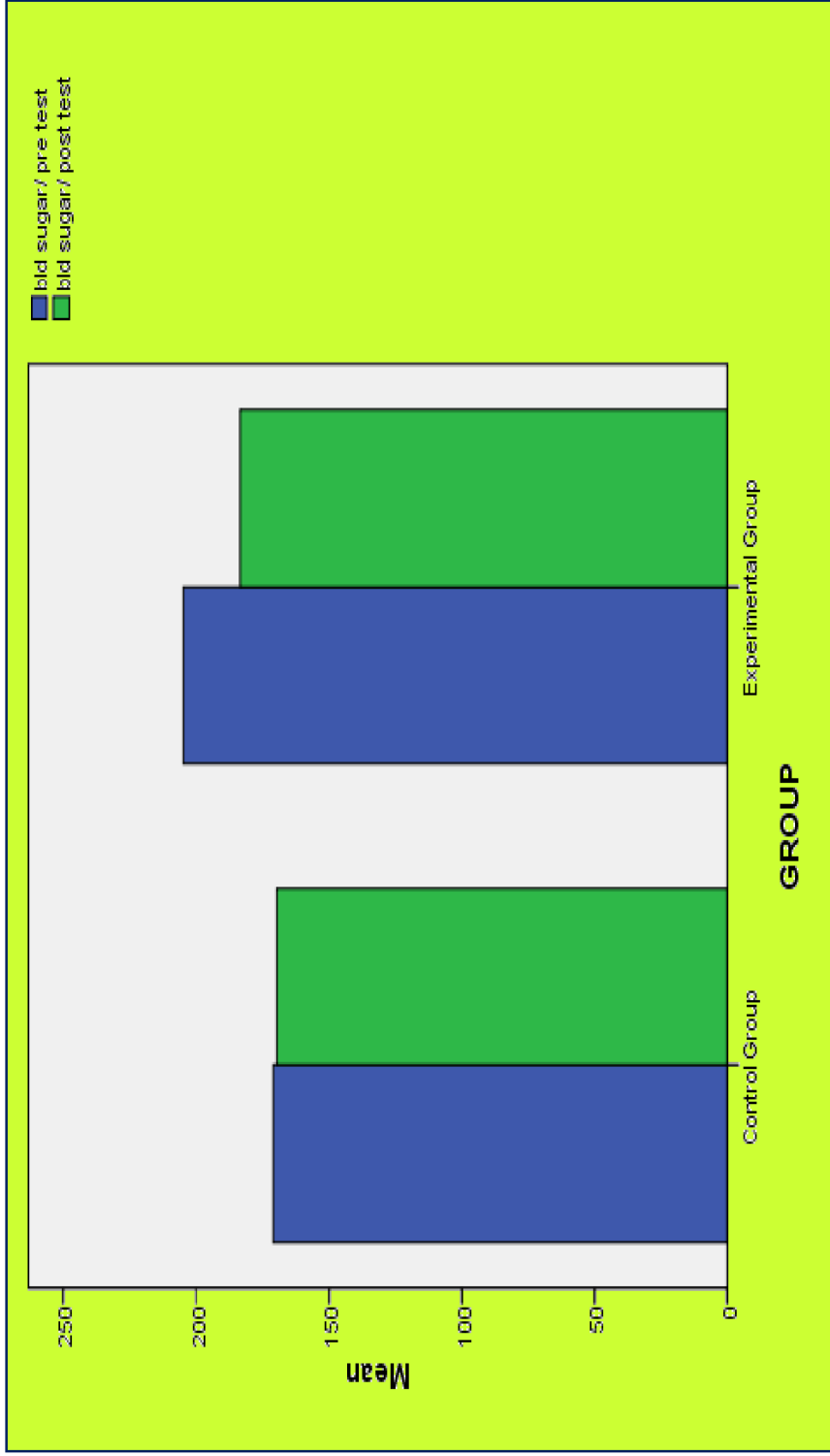


Figure 24: Comparison of pre and post test blood sugar level

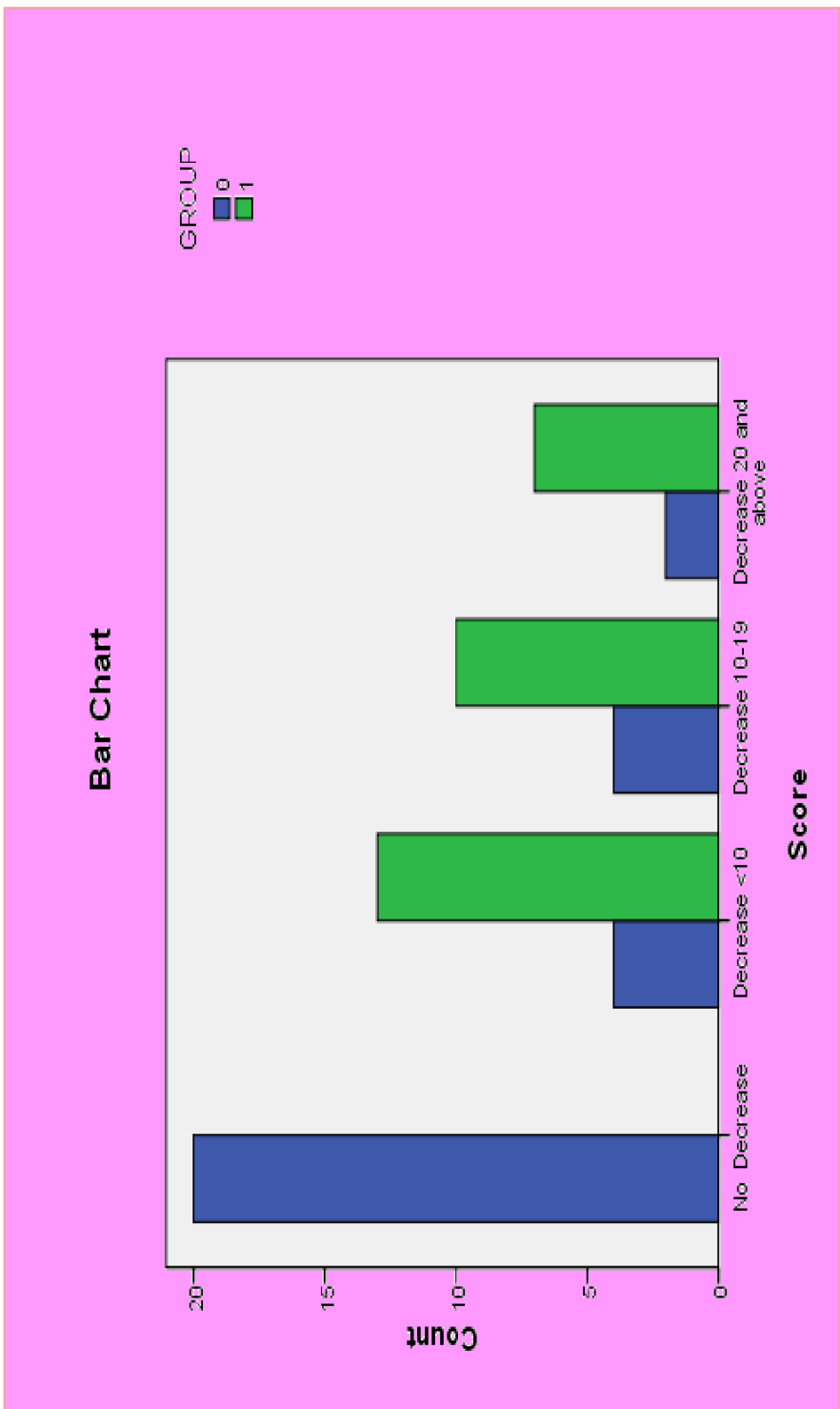


Figure 25: The decrease level of blood sugar among experimental and control group

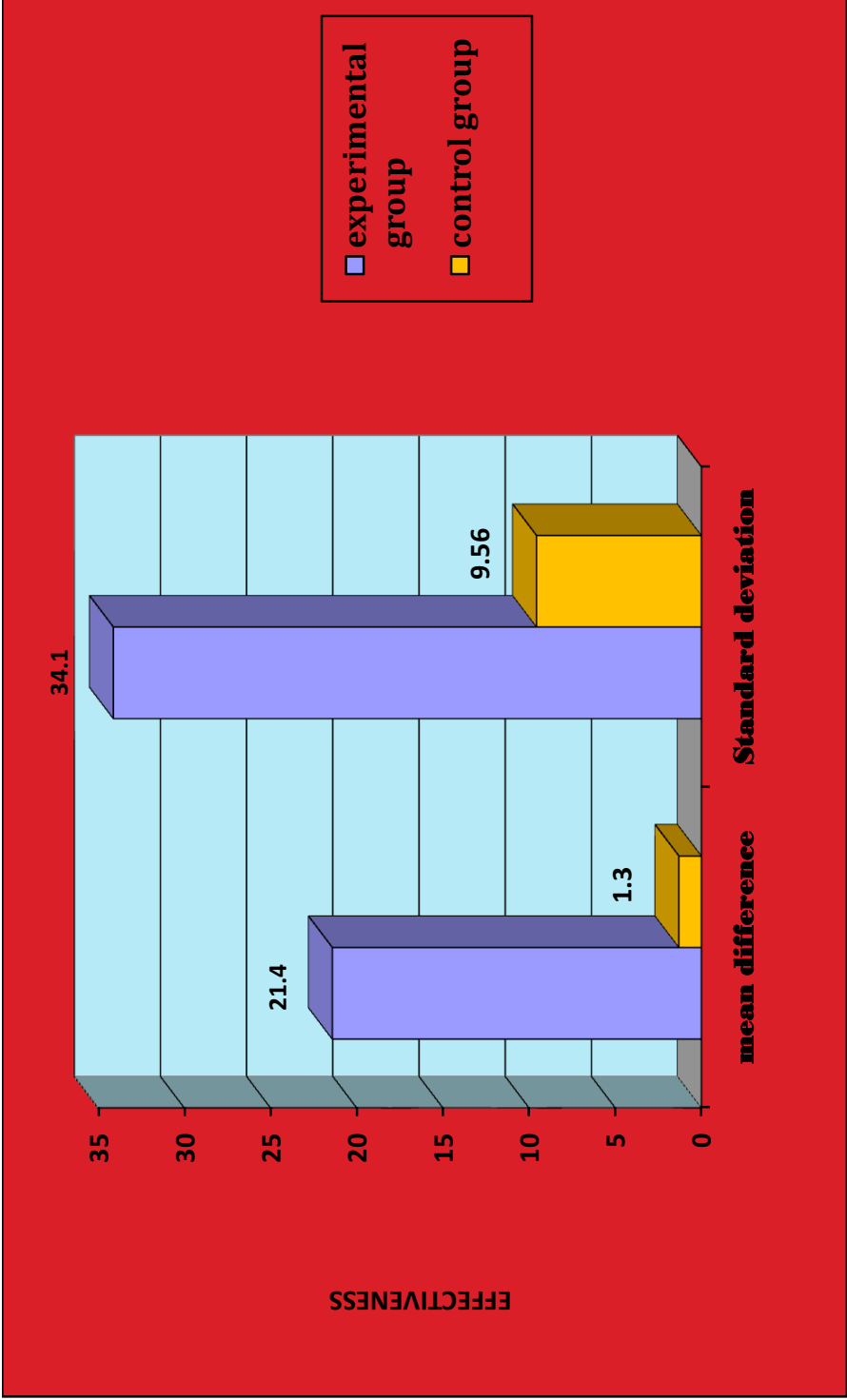


Figure 26 : Effectiveness of the study

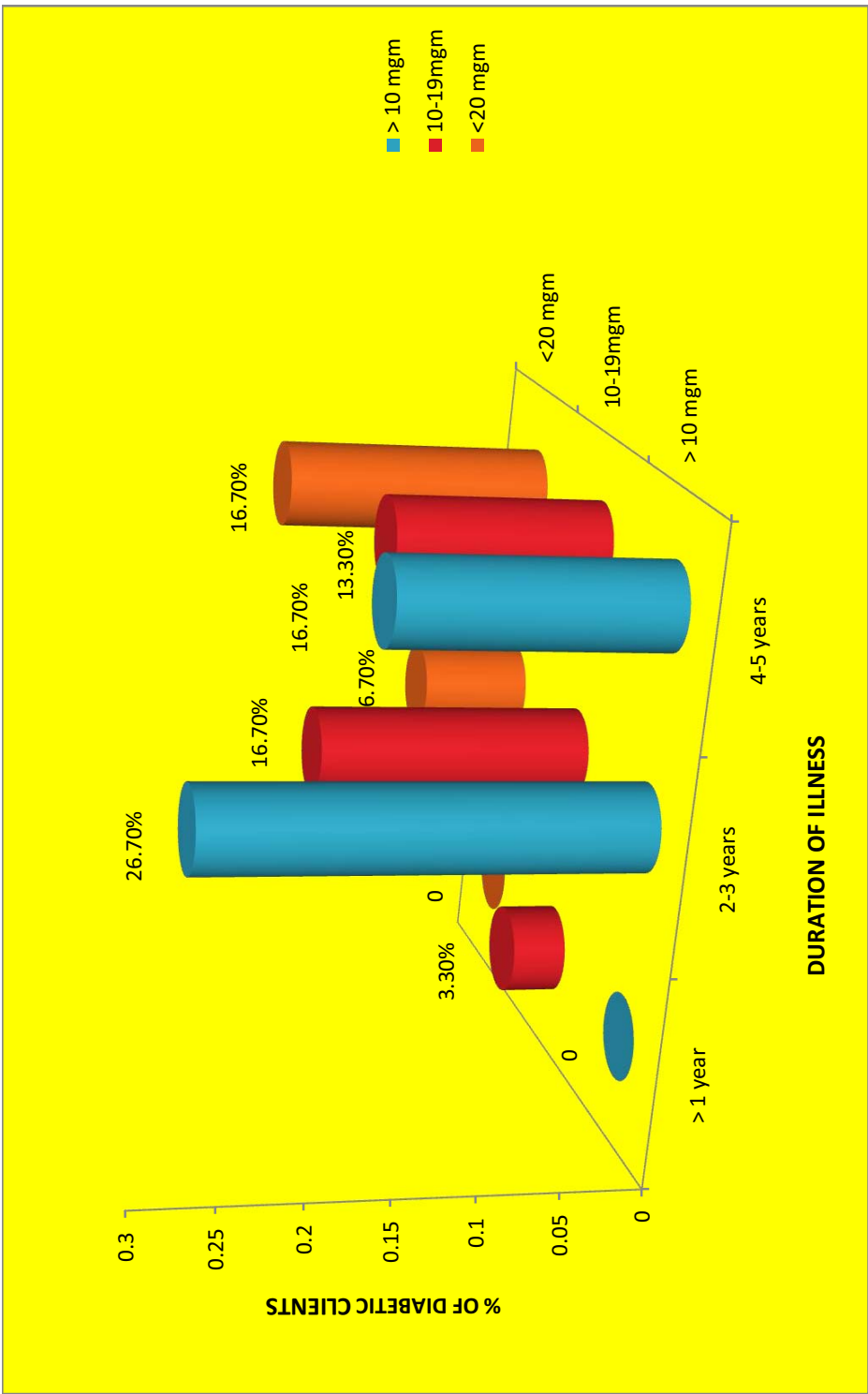


Figure27: Association between reduction in blood sugar level and duration of illness

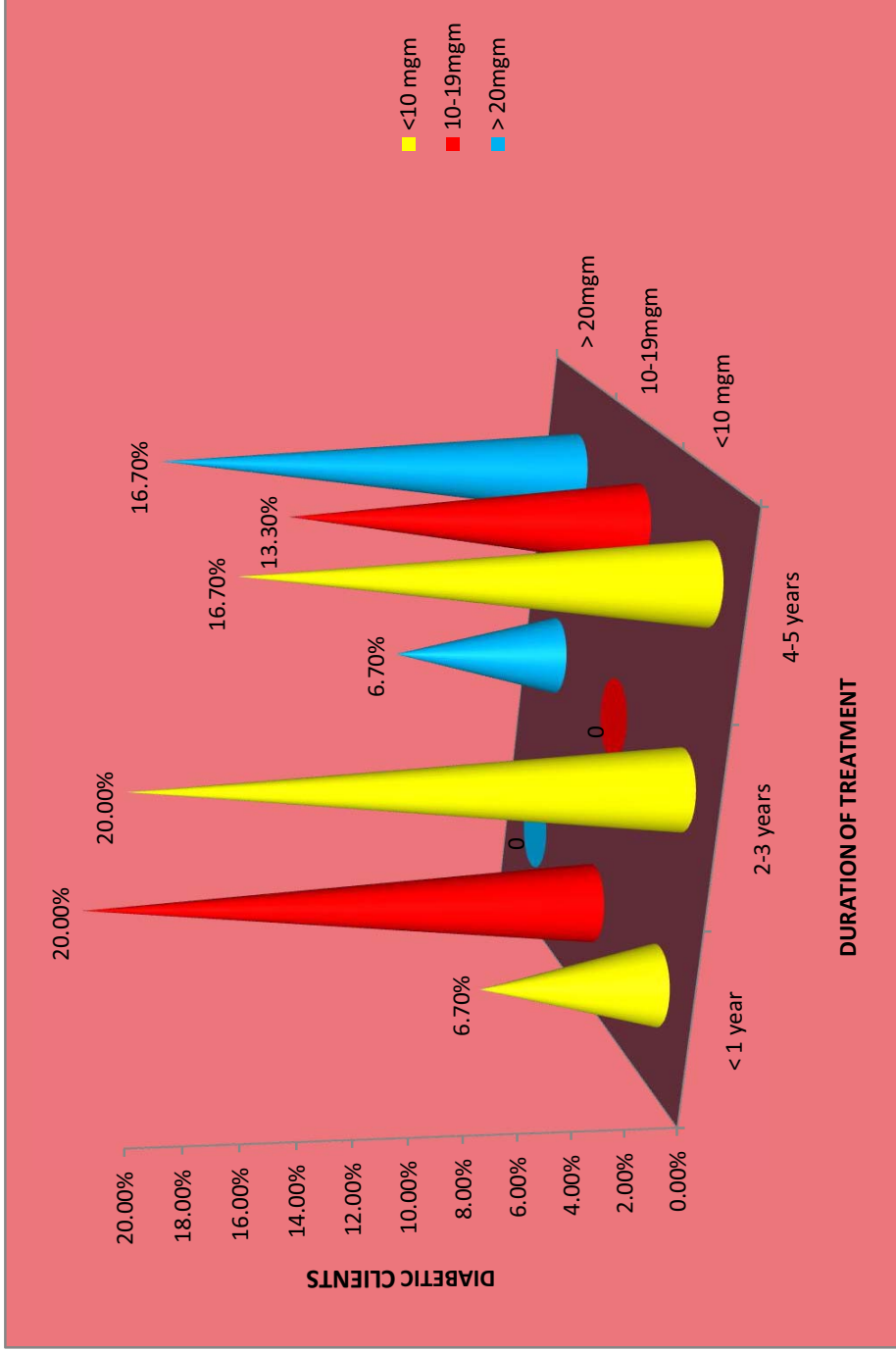


Figure28: Association between reduction in blood sugar level and duration of treatment.

CHAPTER V

SUMMARY OF THE RESULTS

RESULTS

Frequency and percentage distribution of demographic variables of Type II Diabetic Clients in experimental and control group were as follows:

- ❖ Most of Type II Diabetic Patients about 36.7%(19) were in the age group of 51-55 years, and 36.7% (11) of the patients were in the age group of 46-50 years , and 20.0%(6) were in the age group of both 56-60 years and 40-45 years in the experimental group . About 46.7%(14) were in the age group of 51-55 years, and 13.3% (4) of the patients were in the age group of 40-45 years , and 20.0%(6) were in the age group of both 56-60 years and 46-50 years in the control group.
- ❖ Majority of the Type II Diabetic Patients 66.70% (20) were females and 33.3% (10) were males in the experimental group and 56.7% (17) were females and 43.3%(13) were males in the control group.
- ❖ On considering the educational status of the Type II Diabetic Patients 33.3% (10) in the experimental group and in the control group 30.0% (9) were studied up to primary level education.
- ❖ By occupation 63.3% (19) in the experimental group and 40.0%(12) in the control group were home makers.
- ❖ There is equal proportion (76.7%) of clients are following Non vegetarian dietary pattern.
- ❖ About 16.7 % in experimental and 23.3% in control group will take sweets and fried items weekly once.

Frequency and percentage distribution of clinical variables of Type II Diabetic Clients in experimental and control group were as follows:

- ❖ Majority of the Type II Diabetic Patients 73.3% (22) in experimental and 56.7% (17) in control group have no family history of Type II Diabetic mellitus.
- ❖ Those with family history of Type II Diabetes mellitus 16.7% (5) in experimental and 23.3%(7) in control group, Father's have Type II Diabetic mellitus.
- ❖ On the basis of duration of illness equal percentage of the clients 50.0%(15), were within 2-3 years and 4-5 years in experimental group. Half of them 50%(15) were between 2-3 years and 46.7%(14) were between 4-5 years and in control group.
- ❖ 100% in experimental and 90% in control group study participants were on regular treatment.
- ❖ All of the study participants in both group were following (100%) Allopathy treatment.
- ❖ Majority of the participants in both group are taking Tab.Glipizide (36.7%)
- ❖ Around 53.3% in experimental and 56.7% in control group clients are having palpitation symptom on hypoglycemic state.
- ❖ When assessing the knowledge on awareness about complication of diabetes mellitus 100.0%(30) of the patients both in experimental and control group were aware of the complications. According to them 43.3% in experimental and 46.7% in control group assumes that DM will cause eye complications. About 40% in experimental and 53.3% in control group assumes that DM will cause foot ulcers.

Comparison of the level of blood sugar among TypeII Diabetic clients before and after the intervention in experimental group

The blood sugar level in post assessment is reduced when comparing with the pre assessment of blood sugar level among Type II Diabetic client in experimental group. The mean score of pre assessment is 204.90 and post assessment is 183.50. this shows the hypothesis of the study was proved . the t value is 3.437 with $df=29$ and $p=0.002$. is statistically significant

Comparison of the level of blood sugar among TypeII Diabetic clients before and after the intervention in experimental group

The blood sugar level in post assessment is not reduced when comparing with the pre assessment of blood sugar level among Type II Diabetic client in control group. The mean score of pre assessment is 169.53 and post assessment is 170.83. the $p=0.4$ and it is statistically not significant.

The blood sugar level between experimental and control group.

The post assessment of blood sugar reveals that there is a mark reduction in the mean value of blood sugar level in experimental group and statistically significant($p= 0.04$)

The mean and SD between the experimental and control group blood sugar level.

In Experimental group the value in pre test is 204.90 ± 91.20 , and in post test it is 183.50 ± 66.31 . In Control group the value in pre test is 170.83 ± 12.54 and in post test it is 169.53 ± 14.366 . The $p=0.002$ ($t=3.44$) in experimental shows the result was statistically significant.

The decrease level of blood sugar levels in both experimental and control group.

Among this there is about 66.7 % in control group comes under no decrease blood sugar level. About 23.3% of study participant's blood sugar level reduced above 20mg in experimental group. About 33.3% of participant's blood sugar level reduced between 10-19mg in experimental group. The analysis was done with Chi square test and the value is Chi- 30.1 ($P=0.001$) and it is <0.05 it is statistically significant

Mean difference of effectiveness of curry leaves

The mean difference is 21.40 when comparing the pre and post assessment of blood sugar level in experimental group and the mean difference is only 1.3 in control group blood sugar level reduction. Thus the hypothesis of this study was proved.

The effectiveness of the study in 95% CI (confidence interval)

The effectiveness of curry leaves in reducing blood sugar level is high among the experimental group than the control group. The mean difference is 21.4 and it is 10.44% In 95 % CI.

The association between the clinical variables and the reduction of blood sugar level in experimental group.

Less duration of illness and less duration of treatment for Diabetes mellitus are having more reduction in blood sugar level.

It reveals that in the duration of illness 2-3years ($X^2=4.19$, $P=0.005$) and according to the duration of treatment to the illness less than five years ($X^2=12.38$, $P=0.015$) are reduced more post prandial blood sugar level than others.

This study analysis revealed that there is a significant effect of curry leaves powder on reduction of blood sugar level among Type II Diabetic clients

CHAPTER-VI

DISCUSSION

Diabetes is a disease which needs lifelong treatment. Left untreated or improperly treated, it shortens life considerably or debases its quality substantially. They can be largely avoided by taking simple precautions and proper control of the disease which would certainly make it possible to lead a normal, active and healthy life. Research has shown that improved glycemic control reduces the rate and number of diabetes-related complications. To minimize the diabetic complications and to improve the quality of life of diabetic clients this experimental study was done. The purpose of the study was to evaluate the effectiveness of boiled soya beans in control of blood glucose level among Type II Diabetic Patients.

Objectives of the study

- To identify the blood sugar level in type II Diabetic clients by routine blood sugar examination.
- To evaluate the effectiveness of curry leaves on blood sugar level among the clients in the experimental group.
- To compare the effectiveness of curry leaves in control of blood sugar levels in post test result between control and experimental group.
- To associate certain demographic and clinical variables with the reduction of blood sugar level in experimental group

Frequency and percentage distribution of demographic variables of Type II Diabetic Patients in experimental and control group were as follows:

- ❖ Majority of the Type II Diabetic Patients 66.70% (20) were females and 33.3% (10) were males in the experimental group and 56.7% (17) were females and 43.3%(13) were males in the control group.

- ❖ Majority of the diabetic patients 83.3%(25) were Hindus,13.3% (4)were Christians in the experimental group and 76.7% (23)were Hindus 20%(6) were Christians in the control group.
- ❖ Majority of the Type II Diabetic Patients 73.3% (22) in experimental and 56.7% (17) in control group have no family history of Type II Diabetic mellitus.
- ❖ Those with family history of Type II Diabetes mellitus 16.7% (5) in experimental and 23.3%(7) in control group, Father's have Type II Diabetic mellitus.
- ❖ On the basis of duration of illness equal percentage of the clients 50.0%(15), were within 2-3 years and 4-5 years in experimental group. Half of them 50%(15) were between 2-3 years and 46.7%(14) were between 4-5 tears and in control group.
- ❖ .Majority of the participants in both group are taking Tab.Glipizide (36.7%)
- ❖ When assessing the knowledge on awareness of complication of diabetes mellitus 100.0%(30) of the patients both in experimental and control group were aware of the complications. According to them 43.3% in experimental and 46.7% in control group assumes that DM will cause eye complications. About 40% in experimental and 53.3% in control group assumes that DM will cause foot ulcers.

The first objective of the study is to identify the blood sugar level in type II Diabetic clients by routine blood sugar examination.

In this study, the analysis reveals the pretest level of blood glucose among Type II Diabetic patients in experimental and control group. In experiment group blood glucose level in pre test is 204.90 and in control it is 170.83. Statistical calculation was assessed using student independent t-test.

In experiment group post prandial blood glucose level is 183.50 and in control it is 169.53. Statistical calculation was done using student independent t-test.

The second objective of the study is to evaluate the effectiveness of curry leaves on blood sugar level among the clients in the experimental group.

On comparing the pre and post test blood glucose level in relation to curry leaves powder among Type II Diabetic Patients in experimental group. The obtained “t” values of blood glucose level reduction was 3.12 from the base line which is significant at $p \leq 0.003$ levels and the difference between pretest and post test score was analyzed using mean difference with 95% confidence interval.

The findings implies that there was a significant difference in blood glucose level before and after intervention. The mean score of postprandial blood glucose level was 204.90,183.50 and 170.83,169.53 respectively from pre intervention to post intervention, depicts the effectiveness of the interventions, as the mean score decreased .

This study was supported by **“International Journal of Biological Chemistry.” 2007**, Curry leaves may treat diabetes by influencing carbohydrate metabolism. Diabetic rats fed curry leaves for 30 days displayed signs of improved liver and kidney function, according to the findings of a study published in 2007 in the Specifically, curry leaves restored liver and kidney enzymes responsible for breaking down carbohydrates back to their normal levels.

The third objective of the study is to compare the effectiveness of curry leaves in control of blood sugar levels in post test result between control and experimental group.

On comparing the pre and post blood glucose level in relation to curry leaves among Type II Diabetic patients in experimental group and control group, the obtained mean difference is 10.44% and 0.76% respectively. The

finding implies that there is a significant difference between post-prandial blood glucose level in experimental and control group.

This study was supported by *Santhakumari et al. (1987)* reported the hypoglycemic activity of crushed leaves of *Murraya koenigii* in rabbits, human volunteers and alloxan induced diabetic rats. Iyer and Mani (1990) reported that curry leaves powder supplementation (12g providing 2.5 g fibre) to 30 non-insulin dependent diabetes mellitus patients 12g providing 2.5 g fibre) to 30 non-insulin dependent diabetes mellitus patients for a period of 1 month resulted in the transient reduction in fasting and post-prandial blood sugar levels

The fourth objective is to associate certain demographic and clinical variables with the reduction of blood sugar level in experimental group

Less duration of illness and less duration of treatment for Diabetes mellitus are having more reduction in blood sugar level. It reveals that in the duration of illness 2-3years ($X^2=4.19$, $P=0.005$) and according to the duration of treatment to the illness less than five years ($X^2=12.38$, $P=0.015$) are reduced more post prandial blood sugar level than others.

This study analysis revealed that there is a significant effect of curry leaves powder on reduction of blood sugar level among Type II Diabetic clients.

The overall finding of the study showed that the curry leaves was effective in reducing blood glucose level among Type II Diabetic clients in experimental group. Thus as a community health nurse the researcher has educated the community people about the benefits of curry leaves in daily diet at the end of the study.

The assumption of the study was curry leaves may have some effect on blood glucose level is hereby accepted because the present study results also have proved that overall 10.44% of Type II Diabetic patients with high blood glucose levels in experimental group have improvement in reduction of blood glucose after the intervention of curry leaves for 14 days .

Thus the hypothesis:

H1: There is a significant difference between pretest and post test blood sugar level in experimental group and control group

H2: There is a association between the reduction of blood sugar level and selected demographic variables and clinical variables among TypeII Diabetes Mellitus clients were accepted.

CHAPTER-VII

CONCLUSION & RECOMENDATION

7.1 Major findings of the study:

- Majority of the Type II Diabetic Patients 66.70% (20) were females and 33.3% (10) were males in the experimental group and 56.7% (17) were females and 43.3%(13) were males in the control group.
- Majority of the diabetic patients 83.3%(25) were Hindus,13.3% (4)were Christians in the experimental group and 76.7% (23)were Hindus 20%(6) were Christians in the control group.
- Majority of the Type II Diabetic Patients 73.3% (22) in experimental and 56.7% (17) in control group have no family history of Type II Diabetic mellitus.
- Those with family history of Type II Diabetes mellitus 16.7% (5) in experimental and 23.3%(7) in control group, Father's have Type II Diabetic mellitus.
- On the basis of duration of illness equal percentage of the clients 50.0%(15), were within 2-3 years and 4-5 years in experimental group. Half of them 50%(15) were between 2-3 years and 46.7%(14) were between 4-5 tears and in control group.
- .Majority of the participants in both group are taking Tab.Glipizide (36.7%)
- When assessing the knowledge on awareness of complication of diabetes mellitus 100.0%(30) of the patients both in experimental and control group were aware of the complications.

- According to them 43.3% in experimental and 46.7% in control group assumes that DM will cause eye complications. About 40% in experimental and 53.3% in control group assumes that DM will cause foot ulcers.

7.2 Implications of the study

The implications of this study can be seen in areas of nursing practice, nursing education, nursing administration and nursing research.

Nursing practice

- ❖ The community health nurse have a vital role in providing information for all the diabetic population.
- ❖ The community health nurse as a service provider should periodically organize and conducts mass education programme regarding diabetes awareness.
- ❖ Curry leaves being cost effective and have high iron content and effective in reducing the blood glucose level, the community health nurse must implement information education and communication (IEC) to create awareness to the community on the benefits of curry leaves

Nursing administration

- ❖ The community health nurse as an administrator should design formal teaching programme on diabetes mellitus and its prevention using pharmacological and various non-pharmacological methods in reducing blood glucose levels in the community.
- ❖ The nurses posted in the Primary Health Centers for control and prevention of non-communicable disease (NCD Clinics) should take active part in identifying the risk peoples and preventing the occurrence of disease in its earlier stage

- ❖ She should organize for diabetes camps with collaboration with nursing students attending the Primary Health Centre and along with other NGO'S and it should be properly communicated to the public through mass medias.
- ❖ The diabetes training programme to be continued and opportunities must be provided to all the nurses for the effective training in control and prevention of diabetes mellitus

Nursing education

- ❖ As a nurse educators, we must strengthen the concept of non-pharmacological methods for management of diabetes mellitus.
- ❖ Nursing education should emphasize more on preparing the nurses to impart current changes in health information and to update the knowledge in all fields.
- ❖ Nursing curriculum to be equipped with knowledge regarding various health information. Legally accepted home remedies for Diabetic and other non communicable diseases can be included in the syllabus

Nursing research

Nurses should conduct periodic review of research findings and disseminate the findings through conferences, seminars and publication in professional, national and international journals and in the web site also.

7.3 Limitations

- The study was confined to a small number respondents and shorter period that limits the generalization
- The study also limited to the type II diabetic clients

7.4 Recommendations for further study

- ❖ A comparative study can be conducted using curry leaves powder in control of Type II Diabetes mellitus among urban and rural people.
- ❖ A similar study can be conducted in other population like nurses, teachers, factory workers, etc., in Chennai.
- ❖ This study can be replicated with larger samples for better generalization.
- ❖ The adolescent children should be educated by means of mass health awareness programs on diabetes mellitus.
- ❖ Help line to be provided to diabetic patients.

Conclusion

The study proves that curry leaves powder is effective in controlling post prandial blood sugar level among Type II Diabetes Mellitus patients. As curry leaves powder is cheaper, easily available, can grow in all houses in all climate and all type of soil, it is applicable to be used even by low socio economic group peoples. It is one of the cost effective alternative source of reducing blood glucose level among Type II Diabetic patients in the community.

REFERENCE

BOOKS

- 1) Abdellah, F.G., Levin, E, (1979), Better patient care through nursing researched, (6th ed), New York. Macmillan Publishing company.
- 2) Ann. M,(2002), Nursing theories and their work, (3rded), Philadelphia. mosby publication.
- 3) Banerjee, S.R., (1995), Community and social paediatrics, (91sted), new delhi, jaypee brothers publications.
- 4) Basavanthappa, B.T., (1998), Community health nursing, (6thed),New Delhi, Jaypee Brothers Publications.
- 5) Basavanthappa, B.T., (2009), Nursing resaerch, (4thed),New Delhi, Jaypee Brothers Publications.
- 6) Clerk M.J(1996),Nursing in the community, 2nd ed. Stanford:Appleton and Lange publications
- 7) Denise ,F.polit.(2004),Nursing research principles and methods 7th ed.Philadelphia:Lippincott Wiiliams and Wilkins publications.
- 8) Dhaar GM, Rabbani I, (2008), Foundations of Community Medicine, (2nded), New Delhi, Elsevier publication.
- 9) Ghosh, B.N.,(1993),Hygienic and public health,(14thed), Calcutta, Scientific publications,191-193.
- 10) Gulani,K.K.(2006),Community health nursing.Principles and practices New Delhi:Kumar publishing house.
- 11) Gupta, (2000), S.P.Statistical method, (5thed), New Delhi, sultan chand publications.
- 12) K.Park., (2011), Text book of preventive and social medicine, (21sted), Jabalpur, Jaypee brothers publication.
- 13) Kishore .J.(2009),National health programs of India.New Delhi:Century publications
- 14) Lippincott.(1982), Medical and surgical Nursing. 8th ed.U.S.A: Lippincott publications.

- 15) Mahajan.B.K. (1999),Method in Biostatics.6thed.New Delhi:Jaypee Brothers publications
- 16) Nies.M.(2006). Community public health nursing. 4th ed. Philadelphia: Elsevier publications.
- 17) Peggy.L.(1994), Nursing theory. 3rd ed. New Delhi: St.Louis publication.
- 18) Piyus. (2007), Text book of preventive and social medicine. CBS publications.
- 19) Polit D.F, Hugler, B.P., (2000), Nursing research,(6thed), New York, J.P.Lippincott& company.
- 20) Rao, K.S., (2005), An Introduction to community health nursing, (3rded), Chennai, B.I.publications
- 21) Stanhope, (2008), Community health nursing, (7thed), Philadelphia, Elsivier publication.
- 22) Sumathi, (2004), Fundamentals of food and nutrition research and diet therapy, (5thed), New Delhi, International publication.
- 23) SundarLal., (2009),Text book of Community Medicine, New Delhi, CBS publisher.
- 24) Swaminathan.DR.M., (2008), Advanced Text book on Food and Nutrition, Bangalor, Bappco Publisher publications.
- 25) Talboot, KL.A, (1995), Principles and practice of nursing research, (16thed), Missouri, Mosby Publications.

JOURNALS:

1. Adebajo AC, Olayiwola G, Verspohl EJ, Iwalewa EO, Omisore NOA, Bergenthal D, et.al. Evaluation of the ethnomedical claims of *Murraya koenigii*. *Pharm Biol.* 2004; 42(8) : 610-620.
2. Adesina SK, Olatunji OA, Brgenthal D, Reisch J, New Biogenetically Significant Constituents Of *Clausena anisata* And *Murraya koenigii*, *Pharmazie*, 1988;43(3): 221-222.
3. An update on *Murayya Koenigii* S: a multifunctional Ayurvedic herb. *Journal of Chinese integrative medicine.* 2012; 9(8):824-833.
4. Atta-Ur- Rahman, Zaidi R., Firdous S, NMR Studies On Mahanine, *Fitoterapia*, 1988; 59 (6):494-495.
5. Bhaskarachary K, Sankar Rao DS, Deosthale YG, Reddy V, Carotene Content Of Some Common And Less Familiar Foods Of Plant Origin, *Food Chem.* 1995;54:189-193.
6. Bhattacharya P, Chakraborty A, Mukonal A. Probable Biogenetic Intermediate Of Pyrano Carbazole Alkaloid Form *Murraya koenigii*, *Phytochemistry*,1984;23(2):471-472
7. Bhattacharya P, Maiti A. K., Basu K, Chowdhury B. K., Carbazole Alkaloids From *Murraya koenigii*, *Phytochemistry*,1994; 35(4):1085-1086.
8. Chakrabarty M, Nath A, Khasnobis S, Chakrabarty M, Konda Y, Harigaya Y, Komiyama K. Carbazole alkaloids from *Murraya koenigii*. *Phytochemistry.* 1997; 46(4) : 751-755.
9. Chakraborty M, Nath AC, Khasnobis S, Chakraborty M, Konda Y, Harigaya Y et.al, Carbazole Alkaloids From *Murraya koenigii*, *Phytochemistry*, 1997;46 (4): 751-755.
10. Chowdhury BK. Jha S., Bhattacharya P, Mukherjee J, Two New Carbazole Alkaloids Form *Murraya koenigii*, *Indian Jour. Chem.* 2001;Sect B, 40 B (6): 490-494.

11. Gandhi N, Pillai S, Patel P. Efficacy of pulverized *Punica granatum* (Lythraceae) and *Murraya koenigii* (Rutaceae) leaves against stored grain pest *Tribolium castaneum* (Coleoptera: Tenebrionidae). *Int J Agric Biol* 2010; 12(4): 616-620.
12. Gupta GL, Nigam SS, Chemical Examination Of Leaves Of *Murraya Koenigii*, *Planta Med*, 1971;19(1): 83-86.
13. Gupta RS, Singh D, Protective nature of *Murraya Koenigii* leaves against hepatosuppression through antioxidant status in experimental rats. *Pharmacologyonline*, 2007; 1: 232-242.
14. Ito C. Studies On Medicinal Resources of Rutaceous Plants And Development To Pharmaceutical Chemistry, *Natural Med*. 2000; 54: 117-122.
15. Iyer UM, Mani UV. Studies on the effect of curry leaves supplementation (*Murraya koenigi*) on lipid profile, glycated proteins and amino acids in non-insulin-dependent diabetic patients. *Plant Foods Hum Nutr*. 1990; 40(4):275-282.
16. Kesari AN, Gupta RK, Watal G. Hypoglycemic Effects of *Murraya koenigii* on Normal and Alloxan- Diabetic Rabbits. *Journal of Ethanopharmacolgy*, 2005; 97:247-251.
17. Khuntia TK, Panda DS. Evaluation of antibacterial, antifungal and anthelmintic activity of *Murraya koenigii* Spreng. *Pharma Sci Monit* 2011; 2(2):105-110
18. Kirtikar KR, Basu BD. *Indian Medicinal Plants*, Edition 2, Vol. I, Oriental Enterprises, Uttarchal Pradesh, 1981, 473
19. Kumar NS, Mukharjee PK, Bhadra S, Saha BP, Pal BC, *Phytother.Res*. 2010; 24:629-631.
20. Kumar VS, Sharma A, Tiwari R, Kumar S. *Murraya koenigii* (curry leaf): a review. *J Med Arom Plant Sci*. 1999; 21(4) : 1139-1141.
21. Kumar VS, Sharma A, Tiwari R, Sushil K. *Murraya Koenigii*-a review, *JMAPS* 1999.

22. Kureel SP, Kapil RS, Popli SP. Terpenoid Alkaloids Form *Murraya koenigii* Spreng- II: Constitution Of Cyclomahanimbine, Bicyclomahanimbine And Mahanimbidine, Tetrahedron Lett, 1969;44:3857-3862.
23. Kureel SP, Kapil RS, Popli SP. Two Novel Alkaloids Form *Murraya Koenigii*: Mahnimbicine And Bicyclomahanimbicine, Chem. Ind. (London), 1970; 29: 958.
24. Mandal S, Nayak A, Kar M, Banerjee SK, Das A, Upadhyay SN et.al, Antidiarrhoeal activity of carbazole alkaloids from *Murraya koenigii* Spreng (Rutaceae) seeds. Fitoterapia 2010; 8(1):72-74.
25. Manfred F, John MP, Dajaja DS, Douglas AK. Koenoline, a further cytotoxic carbazole alkaloid from *Murraya koenigii*. Phytochemistry, 1985; 24:3041-3043.
26. Mukherjee M, Mukherjee S, Shaw AK, Ganguly SN, Mukonicine, A Carbazole Alkaloid Form Leaves Of *Murraya koenigii*, Phytochemistry, 1983;22(10):2328-2329.
27. Narasimha NS, Paradkar MV, Chitguppi VP, Kelkar SL, Alkaloids Of *Murraya koenigii*: Structures Of Mahanimbine, Koenimbine, (-) Mahanine, Koenine, Koenigine, Koenidine And (+)- Isomahanimbine, Indian. Jour. Chem.1975; 13(10): 993-999.
28. Ningappaa MB, Dhananjayaa BL, Dineshaa R, Harshaa R, Srinivas L. Potent antibacterial property of APC protein from curry leaves (*Murraya koenigii* L. Food Chem 2010; 118(3):747-750.
29. Nutan MTH, Hasnat A, Rashid MA. Antibacterial and cytotoxic activities of *Murraya koenigii*. Fitoterapia, 1998; 69(2):173-175.
30. Palaniswamy UR., Caporuscio C, Stuart J, A Chemical Analysis Of Antioxidant Vitamins In Fresh Curry Leaves By Reverse Phase High Performance Liquid Chromatography With UV Detection, Acta Horti. 2003; 620: 475-478.
31. Ponnusamy S, Ravindran R, Zinjarde S, Bhargava S, Ravi Kumar A. Evaluation of traditional Indian antidiabetic medicinal plants for human

pancreatic amylase inhibitory effect in vitro. Evid Based Complement Alternat Med. Epub 2010 Sep 23

32. Prakash V, Natarajan CP, Studies On Curry Leaf, J. Food Sci. And Technol. 1974, 11: 284-286.
33. Purohit SS, Sharma AK, Prajapati ND, Kumar T. A handbook of medicinal plants: a complete source book. Edition 2. Jodhpur: Agrobios (India). 2009, 352-353
34. Raghunathan K, Mitra R, Pharmacognosy Of Indigenous Drugs, Central Council For Research In Ayurveda And Siddha, New Delhi, Vol. I: 433
35. Rahman MM, Gray AI. A benzoisofuranone derivative and carbazole alkaloids from *Murraya koenigii* and their antimicrobial activity. *Phytochemistry*, 2005; 66:1601-1606
36. Ram HNA, Hatapakki BC, Hukkeri IV, Aryavaidyan J. 2002; 16 (1), 40-44
37. Rana VS, Juyal JP, Rashmi, Blazquez MA. Chemical constituents of the volatile oil of *Murraya koenigii* leaves. *Int J Aromather*, 2004; 14(1): 23-25
38. Rao BRR, Rajput DK, Mallavarapu GR. Chemical diversity in curry leaf (*Murraya koenigii*) essential oil, *Food Chem*. 2011; 126(3): 989-994
39. Rao BRR, Rajput DK, Mallavarapu GR. Chemical diversity in curry leaf (*Murraya koenigii*) essential oils. *Food Chem*, 2011; 126(3): 989-994.
40. Saha C, Chowdhury BK, Carbazoloquinones Form *Murraya koenigii*, *Phytochemistry*, 1998; 48 (2): 363-366
41. Satyavati GV, Gupta AK, Tendon N, Medicinal Plants of India, Vol-2, Indian council of medical research, New Delhi India, 1987.
42. Shah KJ, Juvekar AR. Positive inotropic effect of *Murraya koenigii* (Linn.) Spreng extract on an isolated perfused frog heart. *Indian Journal of Experimental Biology*, 2006; 44:481- 484.
43. Shrinivasan K. Plant foods in the management of diabetes mellitus: spices as beneficial antidiabetic food adjuncts. *Int. J. Food Sci. Nutr*. 2005; 56(6): 399-414.

44. Tachibana Y, Kikuzaki H, Lajis NH, Nakatani N, Anti Oxidative Activity Of Carbazoles Form *Murraya koenigii* Leaves, J. Agric. Food. Chem. 2001; 49: 5589-5594.
45. Tachibana Y, Kikuzaki H, Lajis NH, Nakatani N, Comparison Of Anti Oxidative Properties Of Carbazole Alkaloids From *Murraya koenigii* Leaves, J. Agric. Food Chem. 2003; 51: 6461-6467.
46. Tee E. Song, Carotenoid Composition And Content Of Malaysian Vegetables And Fruits By The AOAC And HPLC Methods, Food Chem. 1991; 41: 309-339
47. The Wealth of India, Council of Scientific and Industrial Research, New Delhi, 2003, 317.
48. Wang YS, He HP, Hong X, Zhao Q, Hao XJ, A New Binary Carbazole Alkaloid From *Murraya koenigii*, Chinese Chem. Letters, 2002; 13(9): 849-850.
49. Xie JT, Chang WT, Wang CZ, Mehendale SR, Li J, Ambihapahar, R, et.al. *Murraya koenigii* reduces blood cholesterol and glucose level in ob/ob mice. American Journal of Chinese Medicine, 2006; 34(22), 279-284.
50. Yun SW, Hong PH, Yue MS, Xin Hong, Xiao JH, Two New Carbazole Alkaloids From *Murraya koenigii*, J Nat. Prod, 2003; 66: 416-418.

NET SOURCES

- ❖ Diabetes mellitus Wikipedia, the free encyclopedia
- ❖ www.medicalnewstoday.com/info/diabetes
- ❖ www.academicjournals.org
- ❖ www.ajol.info › Journal Home ›
- ❖ www.liestrong.com>Diseases and conditions
- ❖ europepmc.org/abstract/MED
- ❖ www.dnaindia.com>health
- ❖ <http://informationhealthcare.com/doi/abs/10>
- ❖ www.livescience.com
- ❖ www.journalofdiabetology.org
- ❖ www.sudjms.net
- ❖ www.medicaldaily.com
- ❖ www.worldhealth.net
- ❖ www.liveinthenow.com
- ❖ www.academia.edu
- ❖ www.medicaldaily.com/health
- ❖ www.livescience.com/
- ❖ www.ncbi.nlm.nih.gov/pubmed
- ❖ www.nutritionandmetabolism.com/content/8/1/18
- ❖ www.academia.edu/
- ❖ www.ncbi.nlm.nih.gov/pubmed/
- ❖ www.jdmdonline.com/content/12/1/14

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the tool constructed by Ms. K.N.Gomathi M.Sc. Nursing II year, College of Nursing, Madras Medical College which is to be used in her study titled "A study to assess the effectiveness of curry leaves in reducing blood sugar among type II diabetes clients in selected rural areas at medavakkam" has been validated by the undersigned. The suggestions and modifications given by me will be incorporated by the investigator in concern with their respective guide. Then she can proceed to do the research.

V. Chydenj

SIGNATURE WITH SEAL

NAME : EBI GOLDA MARY.V
DESIGNATION: READER
COLLEGE : MADHA COLLEGE OF NURSING



PLACE: KUNRATHUR

DATE: 15-07-2015

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the tool constructed by Ms. K.N.Gomathi M.Sc. Nursing II year, College of Nursing, Madras Medical College which is to be used in her study titled "**A STUDY TO ASSESS THE EFFECTIVENESS OF CURRY LEAVES IN REDUCING BLOOD SUGAR AMONG TYPE II DIABETES CLIENTS IN SELECTED RURAL AREAS AT MEDAVAKKAM**" has been validated by the undersigned. The suggestions and modifications given by me will be incorporated by the investigator in concern with their respective guide. Then she can proceed to do the research.



SIGNATURE WITH SEAL

Director

Institute of Community Medicine
M.D. SGGGH
Chennai - 600 003

NAME : Dr. Joy PATRICIA PUSHPARANI, M.D.
DESIGNATION: Professor and H.O.D of community Medicine.
COLLEGE : Madras Medical college, Chennai-03.

PLACE: Chennai-03.

DATE: 13-07-15

பொருள் - பணித்தொகுதி - பொது ககாதாரம் - சென்னை மருத்துவக் கல்லூரியில் 2 ஆம் ஆண்டு பயிலும் மாணவிகள் - மேடவாக்கம் ஆரம்ப ககாதார நிலையத்தில் - மூட்டு வலி, உயர்ந்த அழுத்தம், நீரழிவு நோய், மற்றும் மூட்டு வலியினை நுண்துளை மருத்துவம் (Accupuncture) மூலம் குணப்படுத்துவது - திட்ட செயல்புரிய (Project work) அனுமதியளிக்க கோரியது - அனுமதி வழங்குவது - சம்மந்தமாக.

- பார்வை - 1. அரசாணை (டி) எண்:648 ககாதாரம் மற்றும் குடும்ப நலத் துறை (MCA1) நாள் 02.06.2009.
2. செல்வி.எம்.மகேசுவரி M.Sc. (Nursing) II nd year மாணவி சென்னை மருத்துவக் கல்லூரி விண்ணப்ப நாள் 01.07.2015.
3. செல்வி.ஜி.கதா M.Sc. (Nursing) II nd year மாணவி சென்னை மருத்துவக் கல்லூரி விண்ணப்ப நாள் 01.07.2015.
4. திருமதி.கே.என்.கோமதி M.Sc. (Nursing) II nd year மாணவி சென்னை மருத்துவக் கல்லூரி விண்ணப்ப நாள் 01.07.2015.
5. செல்வி. இளஞ்செல்வி. M.Sc. (Nursing) II nd year மாணவி சென்னை மருத்துவக் கல்லூரி விண்ணப்ப நாள் 01.07.2015.

=====


பார்வையில் கண்டுள்ள விண்ணப்பங்களில், சென்னை மருத்துவக் கல்லூரியில், M.Sc.(Nursing) II nd year பயிலும் கீழ்க்கண்ட மாணவிகள் அவர்களுக்கெதிரே குறிப்பிடப்பட்டுள்ள பொருள் குறித்து 13.07.2015 முதல் 12.08.2015 வரை ஆய்வுப்பணி மேற்கொள்ள அனுமதி வழங்க கோரியுள்ளார்கள்.

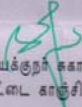
வ.எண்.	மாணவி பெயர்	கல்லூரியின் பெயர்	ஆய்வுப்பணி மேற்கொள்ளவுள்ள பொருள்
01.	செல்வி.எம்.மகேசுவரி M.Sc. (Nursing) II nd year	சென்னை மருத்துவக்கல்லூரி	50-60 வயது மதிக்கத்தக்க பெண்மணிகளுக்கு ஏற்படும் மூட்டுவலியினை கடுகு பூச்சு மூலம் குணப்படுத்துவது குறித்து
02.	செல்வி.ஜி.கதா M.Sc. (Nursing) II nd year	சென்னை மருத்துவக்கல்லூரி	உயர் ரத்த அழுத்தத்தினை வெள்ளிக்காய் மூலம் குணப்படுத்துவது குறித்து
03.	திருமதி.கே.என்.கோமதி M.Sc. (Nursing) II nd year	சென்னை மருத்துவக்கல்லூரி	நீரழிவு நோயினை கருவேப்பிலை மூலம் குணப்படுத்துவது குறித்து
04.	செல்வி. இளஞ்செல்வி M.Sc. (Nursing) II nd year	சென்னை மருத்துவக்கல்லூரி	மூத்தலங்களுக்கு ஏற்படும் மூட்டு வலியினை நுண்துளை மருத்துவம் (Accupuncture) மூலம் குணப்படுத்துவது குறித்து

பார்வையில் கண்டுள்ள அரசாணையில் துணை இயக்குநருக்கு வழங்கப்பட்டுள்ள அதிகாரத்தின் பேரில் சம்மந்தப்பட்ட மாணவிகளுக்கு ஆய்வுப்பணி தொடங்குவதற்கான அனுமதி வழங்கப்படுகிறது.

மேடவாக்கம் ஆரம்ப ககாதார நிலையத்தின் அன்றாடப் பணிகளுக்கு இடையூறு ஏற்படா வண்ணம் அவர்களது ஆய்வுப்பணிகளை நிறைவேற்ற வேண்டுமென பணிக்கப்படுகிறார்கள். மேற்கூறப்பட்ட பணியினை நிறைவு செய்த விவரத்தினை துணை இயக்குநர் அவர்களிடம் தெரிவிக்க வேண்டுமெனவும் கேட்டுக்கொள்ளப்படுகிறார்கள்.

எனவே மேடவாக்கம் ஆரம்ப சுகாதார நிலைய முதன்மை குடிமை மருத்துவ அலுவலர் மேற்குறிப்பிடப்பட்டுள்ள நபர்கள் தங்களது நிலையத்தில் ஒருமாத காலம் ஆய்வுப் பணிகளை மேற்கொள்ளவுள்ளதால், ஆரம்ப சுகாதார நிலைய அலுவலர்களுக்கு இடையூறு ஏற்படா வண்ணம் செயல்பட வேண்டும் என்றும், இப்பொருள் குறித்து எவ்வித தகவல்களும் பத்திரிக்கை மற்றும் ஊடகங்களில் வெளியிடக்கூடாதெனவும் தெரிவிக்கப்படுகிறது.




துணை இயக்குநர், சுகாதாரப்பணிகள்
ஸ்தாப்பீட்டை காஞ்சிபுரம் மாவட்டம்.

பெறுநர்

- 1) செல்வி.எம்.மகேஸ்வரி M.Sc. (Nursing) II nd year மாணவி X சென்னை மருத்துவக் கல்லூரி முதல்வர்
- 2) செல்வி.ஜி.சுதா M.Sc. (Nursing) II nd year மாணவி X மூலமாக.
- 3) திருமதி.கே.என்.கோமதி M.Sc. (Nursing) II nd year மாணவி X
- 4) செல்வி. இளஞ்செல்வி. M.Sc. (Nursing) II nd year மாணவி X

நகல் :-

முதல்வர் சென்னை மருத்துவக் கல்லூரி சென்னை - 600 003.
முதன்மை குடிமை மருத்துவ அலுவலர் ஆரம்ப சுகாதார நிலையம் மேடவாக்கம்.

RESEARCH TOOL

INSTRUCTION:

- ❖ Please be frank and free in answering the question.
- ❖ Read each item carefully and answer all the questions.
- ❖ Answers will be used only for research purpose and will be confidential.
- ❖ Please put a tic mark at the appropriate option.

SECTION -A DEMOGRAPHIC PROFILE

1.Age

- a. 40-45 yrs
- b.45-50yrs
- c.50-55yrs
- d.55-60yrs

2.Sex

- a. Male
- b.Female

3.Religion

- a. Hindu
- b. Muslim
- c. Christian
- d. Others

4.Educational status

- a. Illiterate
- b. Primary
- c. Secondary
- d. Higher secondary
- e. Graduate
- f. Diploma

5. Occupation

- a. Home maker
- b. Private employee
- c. Govt. employee
- d. Self-employee

6.Members in your family at home

- a.<2
- b.3-4
- c.4-5
- d.>5

7.Monthly income

- a. <4726
- b. 4727-7877
- c. 7878-11816
- d. >11816

8.Dietary habits

- a. Vegetarian
- b. Non vegetarian

9.If non vegetarian, how often you will take non vegetarian diet

- a. Daily
- b. Weekly once
- c. Once in a week
- d. Monthly twice

10.If vegetarian, how often you will take fried items and sweets

- a. Daily
- b. Weekly once
- c. Once in a week
- d. Monthly twice

11. Do you perform exercise

- a. Yes
- b. No

12. If yes, what type of exercises

- a. Walking
- b. Jogging
- c. Running
- d. Cycling

13. How often you will perform exercise

- a. Once daily
- b. Twice daily
- c. Twice weekly
- d. Once weekly

14. What is the use of curry leaves in your food

- a. Good for eye sight
- b. Good for hair
- c. Good for diabetic-control
- d. All the above

SECTION-B

MEDICAL RELATED INFORMATION

1.Is there any family history of diabetes mellitus

a. Yes

b. No

2.If yes, mention the relationship

a. Grandfather

b. Grandmother

c. Father

d. Mother

e. Sibling

f. Others

3.Duration of illness

a. <1 year

b. 2-3years

c. 4-5years

d. >5years

4. What are the symptoms you have experienced before treatment

- a. Giddiness
- b. Excessive thirst, hunger, urine
- c. Itching in the genital
- d. Not known area

5. Duration of treatment

- a. <1year
- b. 2-3years
- c. 4-5years
- d. >5years

6. Are you on regular treatment

- a. Yes
- b. No

7. What type of treatment do you follow

- a. Allopathy
- b. Yoga
- c. Siddha
- d. Unani

8. What is the medication prescribed for you

- a. Metformin
- b. Daonil
- c. Glimipride
- d. Glipizide

9. Have you experienced any of the following symptoms of low sugar level

- a. Giddiness
- b. Palpitation
- c. Profuse sweating
- d. None of the above

10. Are you aware of the complications of diabetes

- a. Eye problem
- b. Kidney problem
- c. Nerve problem
- d. Foot ulcer
- e. Others

பகுதி - அ.
மருத்துவம் தொடர்பான தகவல்

1. வயது

- அ. 40-45 ஆண்கள்
- ஆ. 45-50 ஆண்கள்
- இ. 50-55 ஆண்கள்
- ஈ. 55-60ஆண்கள்

2. பாலினம்

- அ. ஆண்
- ஆ. பெண்

3. மதம்

- அ. இந்து
- ஆ. முஸ்லீம்
- இ. கிருஸ்தியன்
- ஈ. மற்றவை.

4. கல்வி

- அ. படிக்கதெரியாது.
- ஆ. ஆரம்பகல்வி
- இ. உயர்கல்வி
- ஈ. மேனிலை கல்வி
- உ. பட்டயப்படிப்பு
- ஊ. பட்டப்படிப்பு

5. தொழில்

- அ. இல்லத்தரசி
- ஆ. தனியார் வேலை.
- இ. அரசாங்க வேலை
- ஈ. சுயதொழில்

6. உங்கள் வீட்டில் உள்ள நபர்கள்

- அ. இருவர்
- ஆ. மூன்று முதல் நால்வர்
- இ. நாங்கு முதல் ஐவர்
- ஈ. ஐவருக்குமேல்

7. மாத வருமானம்.

- அ. <4726
- ஆ. 4727 - 7877
- இ. 7878 - 11816
- ஈ. >11816

8. உணவு பழக்கம்.

- அ. சைவம்
- ஆ. அசைவம்.

9. நீங்கள் அசைவம் எனில், எத்தனை நாளைக்கு ஒருமுறை சாப்பிடுவீர்கள்

- அ. தினமும்
- ஆ. வாரத்திற்கு இருமுறை.
- இ. வாரத்திக்கு ஒருமுறை
- ஈ. மாதம் இருமுறை.

10. நீங்கள் சைவம் எனில் எத்தனை நாளைக்கு ஒருமுறை பொரித்த உணவு மற்றும் இனிப்பு பண்டம் எடுத்துக் கொள்வீர்கள்.

- அ. தினமும்
- ஆ. வாரத்திற்கு இருமுறை
- இ. வாரத்திற்கு ஒருமுறை
- ஈ. மாதம் இருமுறை

11. நீங்கள் உடற்பயிற்சி செய்வீர்களா?

அ. ஆம்.

ஆ. இல்லை

12. ஆம் எனில், என்ன வகையான உடற்பயிற்சி

அ. நடைப் பயிற்சி

ஆ. மிதமான ஓட்டம்.

இ. ஓட்டப் பயிற்சி

ஈ. சைக்கிள் ஓட்டுதல்

13. எத்தனை முறை உடற்பயிற்சி செய்வீர்கள்

அ. தினமும் ஒரு முறை

ஆ. தினமும் இருமுறை

இ. வாரத்திற்கு இருமுறை

ஈ. வாரத்திற்கு ஒருமுறை

14. உங்கள் உணவில் கறிவேப்பிலையின் பயன் என்ன?

அ. கண் பார்வைக்கு நல்லது.

ஆ. முடி வளர உகந்தது.

இ. நீரிழிவு நோயை கட்டுப்படுத்தும்

ஈ. அனைத்தும்.

பகுதி - ஆ.
மருத்துவம் தொடர்பான தகவல்

1. உங்கள் குடும்பத்தில் யாருக்கேனும் நீரிழிவு நோய் உள்ளதா?

- அ. ஆம்
- ஆ. இல்லை

2. ஆம் எனில், உறவுமுறை

- அ. தாத்தா
- ஆ. பாட்டி
- இ. அப்பா
- ஈ. அம்மா
- உ. உடன் பிறந்தவர்கள்
- ஊ. மற்றவர்கள்

3. எத்தனை வருடங்களாக நீரிழிவு நோய் உள்ளது.

- அ. ஒரு ஆண்டு
- ஆ. 1-3 வருடங்கள்
- இ. 4-5 ஆண்டுகள்
- ஈ. 5 வருடத்திற்கு மேல்

4. உங்கள் சிகிச்சைக்கு முன் அனுபவப்பட்ட அறிமுகங்கள்.

- அ. மயக்கம்
- ஆ. அதிகப்படியான தாகம், பசி, சிறுநீர்
- இ. பிறப்புருப்பு அரிப்பு.
- ஈ. தெரியவில்லை.

5. எத்தனை ஆண்டுகளாக சிகிச்சை எடுத்துக் கொள்கிறீர்கள்?

- அ. 1 வருடம்.
- ஆ. 2-3 ஆண்டுகள்
- இ. 4-5 வருடங்கள்
- ஈ. 5 வருடத்திற்கு மேல்.

6. வழக்கமான சிகிச்சை எடுத்துக் கொள்கிறீர்களா?

அ. ஆம்.

ஆ. இல்லை.

7. எந்த வகையான சிகிச்சை முறையை பின்பற்றுகிறீர்கள்?

அ. அலோபதி

ஆ. யோகா.

இ. சித்தா

ஈ. யுனானி.

8. உங்களுக்கு பரிந்துரைக்கப்பட்ட மருந்து எது?

அ. மெட்டார்மின்

ஆ. பயனில்.

இ. கிளைசிபிரைட்

ஈ. கிளைமிபிரைட்.

9. இரத்தத்தில் சர்க்கரை அளவு குறைந்தால் என்ன அறிகுறிகல் தோன்றும்?

அ. மயக்கம்

ஆ. படபடப்பு.

இ. அதிகப்படியான வியர்த்தல்

ஈ. மேற்கண்ட எதுவுமில்லை.

10. நீரிழிவு நோயின் விளைவுகள் பற்றி உங்கள் கருத்து என்ன?

அ. கண் பிரச்சனை.

ஆ. சிறிநீரக பிரச்சனை.

இ. நரம்பு பிரச்சனை.

ஈ. கால் புண்.

உ. மற்றவை.

ஆராய்ச்சி தகவல் தாள்

ஆராய்ச்சி தலைப்பு : சர்க்கரை நோயாளிகளுக்கு (இரண்டாம் வகை) கருவேப்பிலை பொடி தருவதின் மூலம் ரத்தத்தில் சர்க்கரையின் அளவை குறைப்பதற்கான திறனாய்வு

ஆய்வாளர் பெயர் :
பங்கேற்பாளர் பெயர் :
தேதி :
வயது :
பால் :

இந்த ஆய்வு சென்னையில் உள்ள மேடவாக்கத்தில் மேற்கொள்ளப்பட உள்ளது.

உங்களை இந்த ஆய்வில் பங்கேற்க அழைக்கிறோம். நீங்கள் இந்த ஆய்வில் பங்கேற்கலாமா அல்லது வேண்டாமா என்பதை முடிவு செய்ய இந்த ஆவணத்தில் உள்ள தகவல் உதவியாக இருக்கும். உங்களுக்கு ஏதேனும் சந்தேகம் இருந்தால் நீங்கள் எங்களிடம் வெளிப்படையாக கேட்கலாம்.

எங்களுடைய அடிப்படை தகுதிகளில் நீங்கள் திருப்தியாக இருப்பதால் உங்களை இந்த ஆய்வில் பங்கேற்க அழைக்கின்றோம்.

ஆராய்ச்சி மேற்கொள்ளும் முறை:

- ஆராய்ச்சியாளர் கறிவேப்பிலை பொடியை கொடுப்பதற்கு முன்பு நோயாளிகளுக்கு ரத்தத்தில் சர்க்கரையின் அளவு குளுகோமீட்டர் மூலம் அளவிடப்படும்
- கறிவேப்பிலை பொடி 10 கிராம் ஒரு நாளைக்கு 1 முறை வீதம் இரண்டு வாரத்திற்கு உணவுடன் சேர்த்து தரப்படும்.
- இரண்டு வாரத்திற்கு பின் ரத்தத்தில் சர்க்கரையின் அளவு அளவிடப்படும்.
- இதன் மூலம் ரத்தத்தில் சர்க்கரையின் அளவு குறைக்கப்படும்.

உங்களுக்கு உங்களுடைய தகவல்களை இரகசியமாக வைத்துக் கொள்ளும் உரிமை உண்டு. நீங்கள் இந்த ஆய்வில் கையொப்பமிடுவதால் நீங்கள் உங்களுடைய தகவல்களை ஆய்வுக்குழு மற்றும் நிறுவனத்திடம் காட்ட வேண்டும். இந்த ஆராய்ச்சியின் தகவல்களை விஞ்ஞான இதழ்கள் மற்றும் விஞ்ஞான கூடத்தில் வெளியிடப்பட்டாலும் உங்களுடைய அடையாளங்கள் காட்டப்பட மாட்டாது.

ஆராய்ச்சியில் பங்கேற்கவில்லை என்றாலும், உங்களின் சராசரி வாழ்க்கைமுறை, மருத்துவரின் ஆலோசனை மற்றும் சிகிச்சை முறையில் எந்த வித மாற்றமும் ஏற்படாது என்பதை தெரிவிக்கிறேன்.

இந்த ஆராய்ச்சியில் பங்கேற்க விருப்பம் இல்லை என்றால் உங்களின் முழுமனதுடன் நீங்கள் இந்த ஆராய்ச்சியில் இருந்து விலகி கொள்ளலாம் என்பதை தெரிவிக்கிறேன்.

இந்த ஆராய்ச்சியில் உங்களின் மருத்துவதகவல்களை பாதுகாப்பாக வைத்துக்கொள்கிறேன் என்பதை தெரிவிக்கிறேன்.

இந்த ஆராய்ச்சியின் தகவல்களை வெளியிடும் போது, உங்களை பற்றிய அடையாளங்கள் வெளிவராது என்பதை உறுதி கூறுகிறேன்.

ஆய்வாளர் கையொப்பம்

பங்கேற்பாளர் கையொப்பம்

தேதி

தேதி

EXPERIMENTAL GROUP																											
S.No	Age	Sex	Religion	Education	occupation	Family members	Income	Dietary habits	Nu./how often	veg./sweet./fried items	perform exercise	Type of exercise	how often	use of curry leaves	family %/ DM	Relationship	Duration	symptoms	duration of treat	regular treat	type of treat	medication	symptom of low sugar	complications	bid sugar/ pre test	bid sugar/ post test	
1	b	b	a	b	a	c	c	b	b		b			a	b		b	d	b	a	a	b	b	d	156	149	
2	c	a	a	a	d	c	c	b	b		a	d	b	b	a	d	b	b	b	b	b	a	d	c	d	163	160
3	c	b	a	b	a	b	d	b	b		b			b	a	c	c	d	c	b	b	a	d	a	d	427	331
4	d	b	c	a	a	b	c	b	a		b			a	b		c	b	c	a	a	a	a	b	a	145	141
5	b	a	a	e	b	a	d	b	b		a	b	c	a	a	c	b	d	b	a	a	d	d	c	d	162	160
6	b	b	a	f	c	a	d	a		b	b			b	b		c	d	c	a	a	b	b	a	a	263	260
7	c	b	a	d	a	c	d	b	b		b			b	b		b	d	b	a	a	a	a	a	d	164	162
8	b	b	a	a	a	a	c	a		c	b			b	b		c	b	c	b	a	c	b	a	a	506	331
9	d	b	a	a	a	b	b	b	b		b			a	b		a	d	a	a	a	a	a	b	a	409	392
10	a	b	a	b	a	b	b	a		c	b			b	b		c	d	c	a	a	d	b	a	a	158	152
11	a	a	c	f	b	a	d	b	a		a	a	c	b	a	c	b	d	b	a	a	d	b	b	d	175	169
12	d	b	a	a	a	a	c	b	b		b			a	b		c	b	c	a	a	d	b	a	a	146	138
13	a	a	c	d	b	b	d	b	b		a	a	c	a	a	d	b	d	a	a	a	a	a	c	d	174	170
14	b	b	a	b	a	b	c	b	b		b			b	a	d	b	d	b	a	a	b	b	c	d	153	150
15	d	a	a	a	d	a	b	a		b	b			a	b		c	b	c	a	a	a	b	b	a	205	198
16	b	b	a	b	a	b	c	b	c		b			b	b		c	d	c	a	a	c	a	a	d	167	154
17	b	b	a	d	a	c	d	b	b		b			b	b		c	b	c	a	a	d	a	a	a	157	138
18	a	a	a	f	d	c	d	b	b		a	a	c	a	a	d	b	d	b	a	a	a	a	b	d	162	137
19	a	b	a	d	a	b	b	a		b	b			b	b		b	d	a	a	a	a	a	c	a	149	140
20	d	b	a	b	a	d	c	b	c		b			b	a	c	c	a	c	a	a	d	a	a	d	209	185
21	b	a	b	d	b	d	c	b	a		b			a	a	d	b	d	a	a	a	a	a	b	d	176	160
22	a	b	c	c	a	b	b	b	b		b			b	a	c	b	d	a	a	a	a	a	a	a	163	148
23	c	b	a	a	a	a	b	b	d		b			b	b		c	d	c	a	a	b	b	a	a	172	158
24	d	a	a	b	d	a	b	b	d		a	d	b	a	a	d	c	d	c	a	a	d	d	b	d	184	167
25	c	b	a	b	a	a	c	b	c		b			b	a	c	b	a	b	a	a	b	b	a	a	156	134
26	b	b	a	b	a	a	c	b	b		b			a	b		b	d	a	a	a	a	b	a	a	155	137
27	b	b	a	b	a	b	c	a		b	b			b	a	c	b	d	a	a	a	a	a	d	a	165	149
28	d	a	a	a	d	a	b	b	c		a	a	b	a	b		c	b	c	a	a	d	b	b	d	215	187
29	b	b	a	a	a	b	b	b	b		b			b	b		b	d	a	a	a	b	b	a	a	184	167
30	c	a	a	d	b	c	c	a		b	a	d	a	b	b		c	d	c	a	a	d	c	c	d	327	281

CONTROL GROUP																											
S.No	Age	Sex	Religion	Education	occupation	Family members	Income	Dietary habits	Nu./how often	veg./sweetenings of items	perform exercise	Type of exercise	how often	use of curry leaves	family %/ DM	Relationship	Duration	symptoms	duration of treat	regular treat	type of treat	medication	symptom of low sugar	complications	bid sugar/ pre test	bid sugar/ post test	
1	a	b	a	c	b	b	c	a		b	b			b	a	c	b	d	a	a	a	a	a	b	a	156	138
2	c	a	c	e	b	b	b	a		b	a	b	a	a	b		c	d	c	a	a	a	d	a	d	184	166
3	c	b	a	b	a	c	c	b	c		b			b	b		c	d	c	a	a	a	a	b	d	172	155
4	c	a	f	e	d	c	d	b	b		a	d	b	a	b		b	d	a	a	a	a	b	c	a	163	159
5	d	a	a	a	d	b	d	b	c		b			a	a	d	c	a	a	c	a	a	d	b	d	198	176
6	b	b	a	c	a	c	b	a		b	b			b	b		b	d	a	a	a	a	b	b	a	164	142
7	a	b	c	d	b	c	d	b	a		b			b	b		b	d	a	a	a	a	a	b	a	152	137
8	d	a	a	c	c	a	c	a		b	a	a	a	b	b		c	b	c	a	a	a	d	a	d	185	182
9	c	b	a	b	a	b	b	a		b	b			b	a	c	c	d	c	a	a	a	c	b	a	159	162
10	b	b	a	b	a	b		b	b		b			b	b		b	d	a	a	a	a	b	c	d	172	176
11	c	a	c	f	c	b	d	b	a		a	a	c	a	b		c	d	c	a	a	d	c	c	d	183	185
12	c	a	a	b	d	c	c	b	b		a	a	c	a	b		b	d	a	a	a	a	b	b	d	179	183
13	b	b	a	b	a	b	c	b	b		b			a	b		b	d	a	a	a	a	b	b	a	158	165
14	a	b	a	b	a	b	c	b	b		b			a	a	c	b	d	a	a	a	a	a	b	b	169	173
15	d	b	a	a	a	a	b	b	c		b			b	b		c	d	c	a	a	d	a	a	a	162	170
16	c	a	c	d	b	b	c	b	b		a	d	b	a	b		c	d	c	a	a	d	d	c	d	167	172
17	b	b	a	b	a	c	c	b	b		b			b	b		b	d	a	a	a	a	a	a	a	169	176
18	a	b	a	c	a	a	b	a		b	b			b	a	d	b	d	a	a	a	a	a	b	a	152	162
19	c	a	a	d	b	c	d	b	b		a	a	c	a	b		c	d	c	a	a	d	d	b	d	173	170
20	b	a	a	c	c	b	d	b	b		b			a	a	d	b	d	a	a	a	a	b	b	a	155	158
21	c	b	a	d	b	c	d	b	b		b			b	a	c	b	d	a	a	a	a	a	c	d	158	163
22	c	a	c	f	b	c	c	b	b		a	a	c	a	b		c	d	c	a	a	d	a	a	b	175	181
23	d	b	a	f	c	b	d	b	b		b			b	b		b	d	a	a	a	a	a	b	a	163	165
24	d	a	a	c	d	a	b	b	b		a	d	b	a	b		c	d	c	a	a	d	d	c	d	192	192
25	c	a	a	e	b	b	d	b	b		a	a	c	a	b		c	d	c	a	a	a	c	b	b	174	176
26	c	b	c	f	c	a	d	b	c		b			b	b		c	b	c	a	a	a	c	b	b	182	185
27	c	b	a	b	a	a	c	b	b		b			b	b		b	d	a	a	a	b	c	a	a	176	178
28	c	a	a	c	d	c	c	a		b	a	a	c	a	b		c	d	c	a	a	d	c	c	d	190	185
29	b	b	a	b	a	b	c	b	b		b			b	a	c	b	d	a	a	a	a	a	a	a	159	162
30	d	b	a	a	a	a	c	b	b		b			b	b		c	d	c	a	a	d	b	b	b	184	192