EFFECTIVENESS OF CURRY LEAVES POWDER ON CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETIC CLIENTS AT SELECTED RURAL AREAS IN COIMBATORE.

By

Reg. No: 301726002

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

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APPROVED BY THE DISSERTATION COMMITTEE ON OCT 2018

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OCTOBER 2019

PLAGIARISM CERTIFICATE

This is to certify that this dissertation work titled "**EFFECTIVENESS OF CURRY LEAVES POWDER ON CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETIC CLIENTS AT SELECTED RURAL AREAS IN COIMBATORE."** Done by the candidate **Lincy P Varghese** with registration number **301726002** for the award of M.Sc Nursing in the branch of **Community Health Nursing.** I personally verified the **PLAGIARISM CHECKER X.COM** website for the purpose of plagiarism check. I found that the upload thesis file contains from introduction to conclusion pages and results shows **3%** of plagiarism in the dissertation.

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SUBJECT GUIDE SIGNATURE **PRINCIPAL SIGNATURE**

Dedicated to

Almighty God,

Lovable Parents,

Husband, Kids

Friends & Well wishers.

ACKNOWLEDGEMENT

ACKNOWLEDGEMENT

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ABSTRACT

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Statement of the Problem : Effectiveness of curry leaves powder on control of blood sugar among type 2 diabetic clients at selected rural areas, Coimbatore. **Study Objectives :a)**Pre assessment of fasting blood sugar level in experimental and control group.**b)**Administering curry leaves powder in the experimental group.**c)**Post assessment of fasting blood sugar level in experimental and control group.**d)**Association of pretest level of blood sugar scores with demographic variables among type 2 Diabetic clients in experimental group.**Methodology :** Quantitative approach, quasi experimental research design was used for the present study. The sample for the study consists of 40 type 2 diabetic clients, 20 in experimental group and 20 in control group, selected by non probability convenience sampling technique. **Results :** Descriptive and inferential statistics were used to analyze the data. The obtained ‘t’ value for blood sugar level was 13.16 for the experimental group. The obtained ‘t’ value for blood sugar level in type 2 diabetic clients were higher than the table value. **Conclusion :** The level of blood sugar in type 2 diabetic clients who received curry leaves powder was significantly reduced than those who did not received curry leaves powder.

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CHAPTER - I

CHAPTER – 1

INTRODUCTION

"Good Health and good sense are two of life's greatest blessings"

- PubliliusSyrus

Health as defined by the World Health Organization, is "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity**". [W.H.O]**

RashtriyaKishorSwasthyaKaryakaram (2019),Behavior and lifestyle of Indians has seen a remarkable change due to extensive economic and social development, increase in technical knowledge and a revolution in information technology. Along with this the non communicable diseases are also growing in size. Many studies have found that health problems are mostly related to stress. Stress seems to worsen or increase the risk of conditions like Obesity, Heart disease, Alzheimer's disease, Diabetes, Depression, Gastrointestinal problems, and 'Asthma'.

William C.ShielJr, MD, FACP, FACR (2018),Diabetes is a group of metabolic disorders characterized by abnormal metabolism which results most notably in hyperglycemic due to defects in insulin secretion, insulin action or both. "Diabetes" comes from the Greek word for "Siphon"and implies that a lot of urine is made, the second term, "mellitus" comes from the Latin word, "mel" which means "honey" that was used because the urine was sweet.

SharaR.Bialo, MD (2018),People with type1 diabetes must use insulin injections to control their blood glucose. Type1 is the most common form of diabetes in people who are

underthe of age 30, but it can alsooccur at any age. Tenpercentage of people with diabetes are diagnosed with type1.

Michael Dansinger, MD (2019),In type2 diabetes (adult onset diabetes) the pancreas makes insulin, but it either doesn't produce enough, or the insulin does not work properly. Nine out of ten people with diabetes have type2. This type occurs most often in people who are over 40 years old. But, can occur even in childhood,if there are manyrisk factors present. Type2 diabetes may sometimes be controlled with a combination of diet, weight management and exercise, even when there are treatmentlike oral glucose-lowering medications or insulin injections.

NEED FOR THE STUDY

Both type1 and type2 Diabetes share one central feature, that is elevated blood sugar level due to absolute or relative insufficiencies of insulin, and deficiency of a hormone produced by the pancreas.

Type1 -Beta cell destruction completely leading to absolute insulin deficiency.

Type2 - Combination of insulin resistance and Beta cell dysfunction.

Diabetes currently affectsmore than 62 million Indians, which is more than 7.1% of the adult population. The average age on onset is 45 years. A study by the American Diabetes Association reports that India will face the greatest increase in people who diagnosed with Diabetes by the year 2030.

Sri Chithita Hospital in Kerala found from recentstudy that in 12,000 adults one in five adults havingDiabetes. Diabetes is much higher in Kerala than in other states with prevalence

of 19.4%. Kerala is the diabetes capital of India. In the control of rates of diabetes are poor, it leads to an increase in the burden of cardiovascular disease (CVD), the foremost killer of diabetes clients.

Increase age, obesity, positive family history of diabetes, abnormal sub capsular triceps skin fold ratio, these are all found to be associated with increased risk of diabetes. A simple cutaneous sign, acanthosisnigricans was independently associated with increased risk of diabetes and can be used as an indication for screening diabetes and pre diabetes.

According to the book, 'Healing spices' by **Dr.Bharat BAggarwal (2018),** researches at Tang center for Herbal Medicine Research at the University of Chicago used curry leaf to reduce levels of high blood sugar by 45 percent.

Curry leaves popularly known as kadipatta, scientific name MurrayaKoenigii, have long been used to add a distinctflavour to curries and rice dishes. The wonderful fragrant, tangerine- like flavor is the common cause of using curry leaf in South Indian delicacies. Curry leaf is also a standard remedy in Ayurveda, the traditional medicine of India. While it is managing thehealth conditions likeHeart diseases, andInfections,informations showedthat it can manage diabetes too. It is loaded with anti oxidants like beta-carotene and vitamin C curry leaves have the ability to keep out of most diseases at bay, especially type2 diabetes and heart diseases. [IST 2018, November 20] Curry leaf is said to be rich in fibre content.Fibre is responsible for slowing down the digestion and does not metabolise the food items quickly, which keeps your blood sugar level under control. Curry leaf tends to boost your insulin level actively and make the blood sugar levels get stabilised. Even when the body is enable to use insulin properly.

Die Pharmazie (2017), Published an International Journal of Pharmaceutical sciences. The anti- hyperglycemic properties of the leaves were shown to be effective in controlling the blood glucose levels in diabetic rats. It has compounds which slowing down the rate of starch-to-glucose breakdown in people with diabetes. Curry leaves can also control the amount of glucose which is entering into the blood stream.

A study found outthat curry leaves can reduce cell death in pancreatic cells which is responsible for insulin production. Curry leaves can reduce blood sugar levels and are specially helpful to people who are getting diabetes due to obesity. If diabetes runs in your family means you should include curry leaves in your diet which is known to prevent hereditary diabetes and also for type2 diabetes.

During community posting investigator found that many individuals with type2 diabetes were not aware about the complementary therapy which are reducing blood sugar level. Curry leaves powder is one of the complementary therapy which help to control blood sugar. Hence the researcher was interested to do the study of effectiveness of curry leaves powder on control of blood sugar among type2 diabetic clients at selected rural areas in Coimbatore.

STATEMENT OF THE PROBLEM

Effectiveness of Curry Leaves Powder on Control of Blood Sugar AmongType2 Diabetic Clients at Selected Rural Areas, in Coimbatore.

OBJECTIVES

- Pre Assessment of fasting blood sugar level in experimental and control group.
- Administering curry leaves powder to the experimental group.

- Post assessment of fasting blood sugar level in experimental and control group.
- Association of pre-test level of blood sugar scores with demographic variables among type 2 Diabetic clients in experimental and control group.

OPERATIONAL DEFINITIONS

Hypothesis

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

Effectiveness

It refers to the extent to which curry leaves powder is successful in controlling the blood sugar among type2 diabetic clients.

CURRY LEAVES POWDER

It refers to the fresh curry leaves taken from the plant, washed with water then dried properly under shadow. Powdered and filtered well by strainer in each packet there is containing 10gm curry leaves powder packets are provided to them previously and advice them to have one packet powder each day by adding 100ml of warm water with breakfast.

ASSUMPTIONS

- Curry leaves has no adverse effect.
- Clients will be receptive to dietary intervention along with medication.
- The preparation of any leaves powder is easy and can be practically provided at home .

CHAPTER - II

CHAPTER – II

REVIEW OF LITERATURE

Review of literature is a key step in the research process. It provides basis for future investigations that justifies that need for study and relates the findingsfrom one study to another with a hope to establish a comprehensive study of scientific knowledge in a profession discipline which is valid and pertinent theories may be developed further.

For the present study, the related literature is reviewed and organized under the following headings.

- Literature related to prevalence of type2 diabetes mellitus.
- Literature related to curry leaves powder on control of blood sugar level among type 2 diabetic clients.

LITERATURE RELATED TO PREVALENCE OF TYPE 2 DIABETES MELLITUS

In **2018 the American Diabetes Association** estimated that there are more than 500 million prevalent cases of type 2 diabetes worldwide and prevalence is comparable between high-and low- income countries. The prevalence will increase in all countries covered over the projection period, but the greatest growth will be experienced in lower- income countries.

In **2017 International Diabetes Federation** found that 425 million people have diabetes in the world and 82 million people in the SEA Region, by 2045 this will rise to 151 million. There were over 72,946,400 cases of diabetes in India in 2017.

Among the subject population, there were 97 overweight and 203 obese. The 56 subjects were found to be diabetic. The prevalence of type 2 Dm in overweight subjects was 15.5% and in obese was 20.2% and overall was 18.7% [Journal of family medicine and primary care 3 (1), 25, 2014].

Murugan. A (2012) conducted an epidemiological study on type 2 diabetes mellitus in Kaani tribes of Kanyakumari district, Tamil Nadu. The sample size was 1000. The data were collected by using standard questionnaire. The overall disease prevalence is 1.2% which includes 0.8% in males and 1.6% in females of 51-88 yrs. It is evident that diabetes is detected only in three places with low incidence rate. Diabetes prevalence is noticed both in males and females of Kollenchimadam and Mothiramalai areas, where as it is detected only in females of Mukkaraikal and the disease prevalence ratio is higher in females than males. It concluded that the incidence of diabetes in 50 plus aged people reveals that it is an age related illness.

Nafisa. C. Vaz. et.al, (2011) conducted a community based study to determine the prevalence of type 2 diabetes mellitus and its associated diabetic complications in rural Goa, India. The sample size was 1266. The data were collected by using interview method. The results showed that among total 1266 study participants about 130 (10.3%) were diabetics. The prevalence of the associated diabetic complications were as follows viz. neuropathy (60%), CHD (Coronary Heart Disease) (32.3%) and Cataract (20%), Retinopathy (15.4%), Peripheral vascular disease (11.5%) and Cerebro vascular accidents (CVAs) (6.9%). It concluded that the prevalence of Diabetes Mellitus and its associated complications was higher among the diabetic individuals in the rural setting of Goa, India. All the associated diabetic complications observed need to be addressed with appropriate prevention and control strategies.

Literature Related To Effectiveness of Curry Leaves Powder On Control of Blood Sugar Level Among Type 2 Diabetes Mellitus

VaishaliGaikwad and Dr. Suresh Ray (2018) conducted a study to identify, to assess the blood sugar among client before and after administration of curry leaves in experimental and control group and to see the effect of curry leaves on blood sugar. 3gm of curry leaves powder was administered to the client in experimental group for 30 days. The fasting blood glucose level was monitored on 1^{st}, 15^{th}, 30^{th} day. By the 30^{th} day the fasting blood glucose level in experimental group decreased significantly as compared to that in control group.

K. N Gomathi2016, conducted a study to assess the effectiveness of curry leaves in reducing blood sugar among type 2 diabetes clients in selected rural areas at Medavakkam, Chennai. In this study the sample comprises of 60 Type 2 Diabetic adults in which 30 client were in experimental and 30 were selected in the control group. Pre test of postprandial blood glucose level was assessed by glucometer for both experimental and control group. 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 15^{th} day for both experimental and control group.On comparing the pre and post blood glucose level,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.

Sathyavadi et al., (2016) An experimental study was conducted on the effectiveness of extracts of murrayakoenigi on the levels of blood glucose. The leaves were cleaned, dried and finely powered. Each gram of powered 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 to 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 murruyakoenigiwere equally potent as that of hypoglycemic agents.

Narayana and Sastry (2013). An evaluatory study was conducted on the effectiveness of freeze dried leaf power of murrugakoenigi 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 close of 300mg/kg was more effective than oral hypoglycemics (2.5mg/kg).

Roy et al., (2012), An experimental study with curry leaves powder supplementation (12g providing 2.5g fibre) was carried out for a period of 1 month in 30 non- insulin dependent diabetes mellitus patients.The parameters monitored at 1^{st},15^{th} and 30 days were fasting and 2 hour post prandial blood sugar levels, serum total cholesterol and its lipo- protein in 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. ie, either at 15 days or 20 days.

CONCEPTUAL FRAMEWORK

Concept is a thought frame or mental image framed in mind in response to learning something new. A framework is a basic structure supporting anything. A conceptual framework deals with abstraction (concept), which is assembled by nature of their relevance to a common theme.

Conceptual framework is a theoretical approach to study problems that are scientifically based and emphasis the selection, arrangement and classification of the concepts.

One of the important function of conceptual frame work is to communicate clearly the inter relationship of various concepts. It guides an investigator to know what data needs to be collected and give direction to the entire research process.

Conceptual framework modified based on J.W. Kenny's open system model. A system theory is a set of interacting parts or components and it depends on the quality of its input, throughput, output and feedback. Input consists of information, material or energy that enters the system. After the input is absorbed by the system, it is processed in a way useful to the system. This information is called throughput. Output from a system is energy, matter or information given out by the system as results of its processes. Feedback is the mechanism by which some of the output of a system is returned to the system as input. Feedback enables a system to regulate itself by redirecting the output of a system back into the system as input, thus forming a feedback loop.

In this study, Input is the assessment of demographic variables and monitor blood sugar level in control and experimental group. Throughput is providing curry leaves powder to

experimental group and nothing is given to the control group. Output is the reduced level of blood sugar in experimental group and no changes in control group. Feedback is not included in this study.

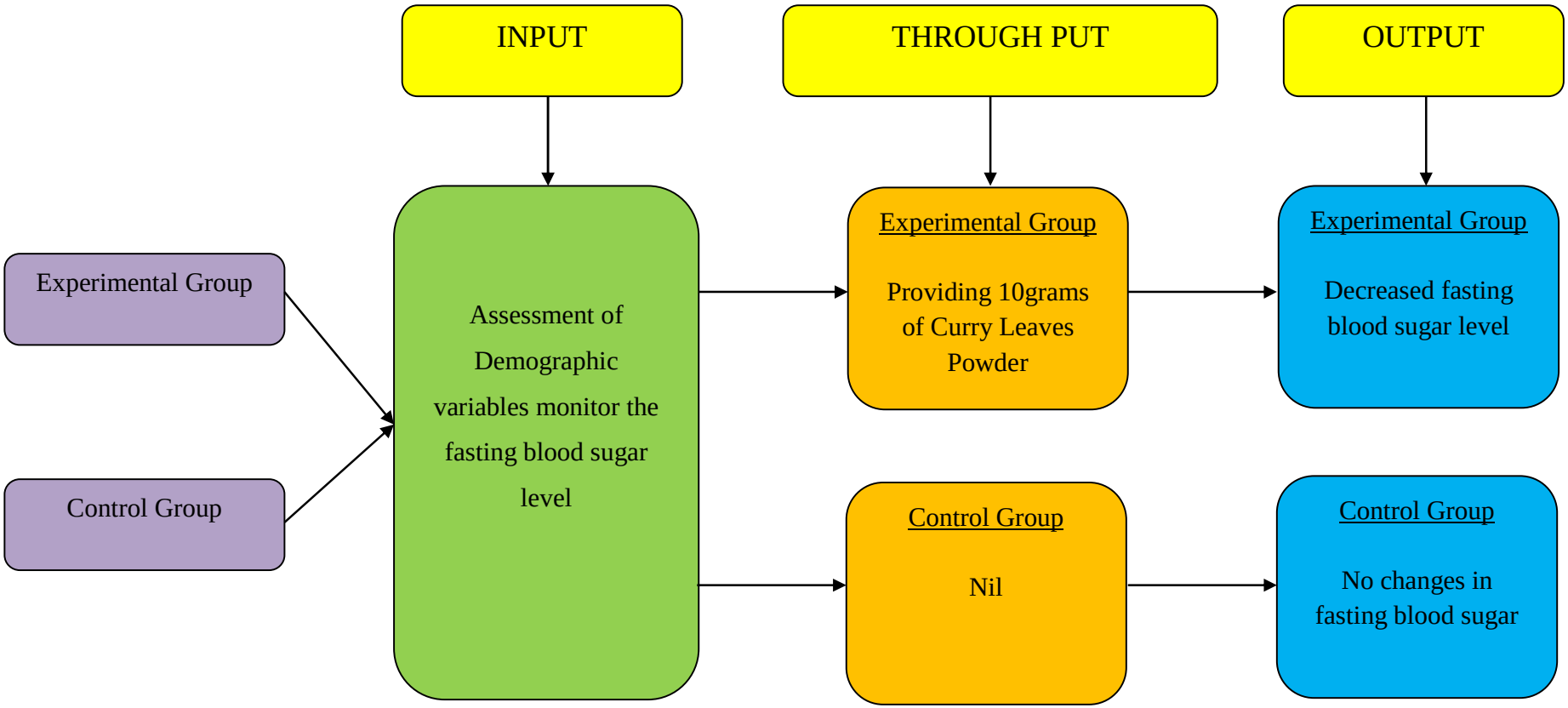

Figure :1 Modified Conceptual Frame work Based on J.W. Kenny's Open System Model

CHAPTER - III

CHAPTER –III

METHODOLOGY

Methodology is the way to solve the problem systematically, that includes steps of procedure and strategies of the data. It includes description of research approach, research design, setting of the study, variables, population, sample size, sampling technique, criteria for the sample selection, description of the tool, testing of the tool, pilot study, data collection procedure and plan for data analysis.

RESEARCH APPROACH

Quantitative approach was used for the present study.

RESEARCH DESIGN

The research design provides an overall plan for conducting the study. Quasi experimental research design was adopted for the present study.

E	O_1	X	O_2
C	O_1	--	O_2

E - Experimental group

C - Control group

Q_1 - Pre test fasting blood sugar values

X - Intervention (Providing curry leaves powder)

Q_2 - Post test fasting blood sugar values

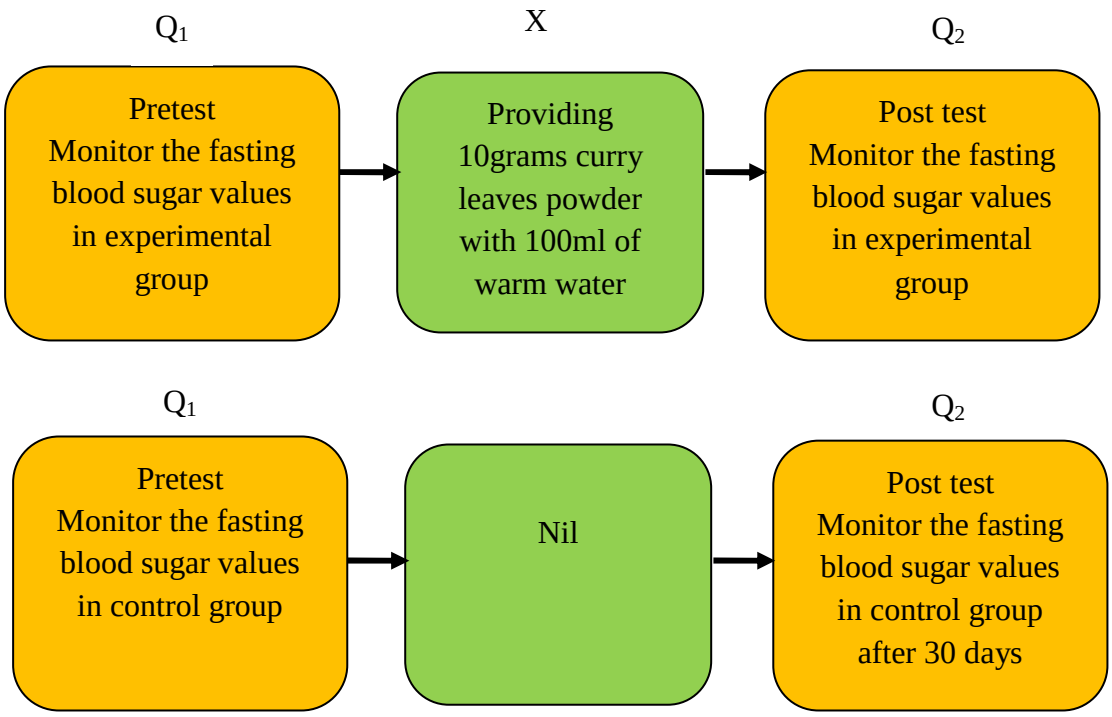

Figure :2The schematic Representation of Research Design

SETTING OF THE STUDY

The study was conducted in Kovilpalayam, which is situated 2km away from PPG College of Nursing.

VARIABLES

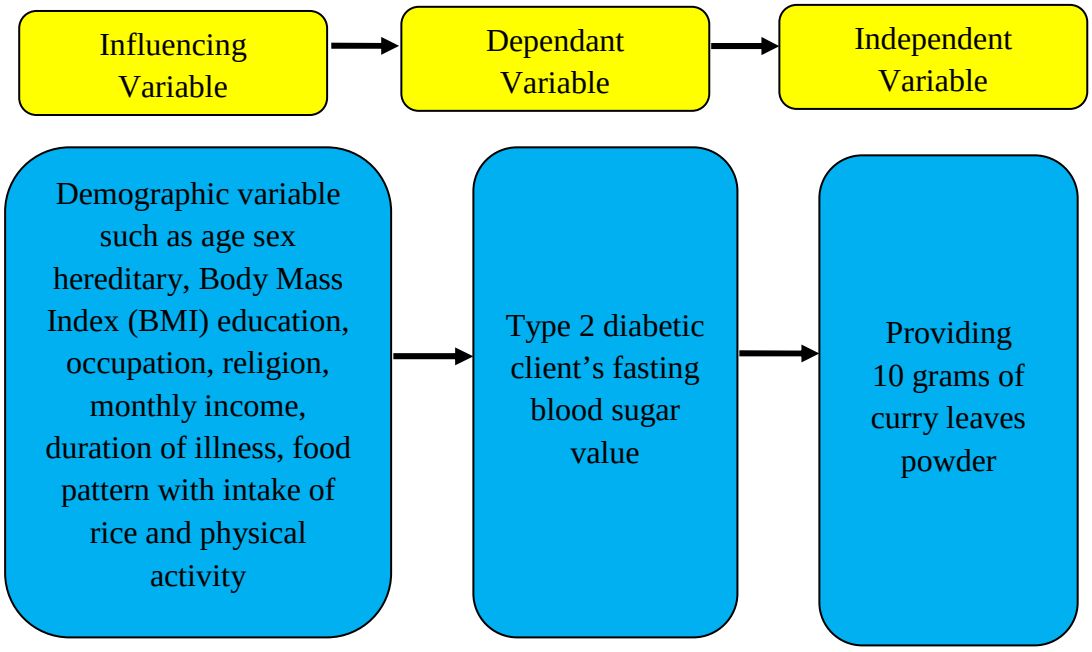

Figure :3The Schematic Representation of the Variables

POPULATION

The population for the present study is type 2 diabetic clients residing in Kovilpalayam.

SAMPLE SIZE

The sample size of the present study was 40 type 2 diabetic clients residing in Kovilpalayam, out of which 20 samples belongs to experimental group and 20 samples belongs to control group.

SAMPLING TECHNIQUE

Non-probability convenience sampling technique was used for selecting the samples.

CRITERIA FOR SELECTION OF SAMPLES

Inclusive Criteria

- Type 2 diabetic clients ≥ 30 years of age.
- Type 2 diabetic clients who have fasting blood sugar greater than 110 milligram per deciliter.
- Type 2 diabetic clients who are free from hypertension and cardiac disease.
- Type 2 diabetic clients who are willing to participate in this study.

Exclusive Criteria

- Type 2 diabetic clients who are on any other alternative system of medicine.
- Type 2 diabetic clients with diabetic complications like diabetic angiopahty, diabetic neuropathy, retinopathy, cardiomyopahty, and nephropathy.
- Type 2 diabetic clients who are not available at the time of data collection.

DESCRIPTION OF THE TOOL

The researcher has developed a tool after reviewing the literature to assess the pre test and post test fasting blood sugar values. It has two sections.

Section-A Demographic Variables

It consists of demographic data seeking information about age, sex, hereditary, Body Mass Index (BMI), education, occupation, religion, monthly income, duration of illness, food pattern with intake of rice and physical activity.

Section-B Observation Schedule on Glucometer

It was used to record fasting blood sugar level among type 2 diabetic clients on the 1st day and 30th day before intervention in experimental and control group.

TESTING OF THE TOOL

CONTENT VALIDITY

The tool was given to 6 experts in the field of nursing and medicine for content validity. All comments and suggestions given by the experts were duly considered and corrections were made after discussion with research guide.

PILOT STUDY

In order to test the relevance and practicability of the study, a pilot study was conducted among 4 type 2 diabetic clients (2 in experimental group and 2 in control group) residing at Kandhasamy Nagar. The pilot study revealed that the present study was feasible to conduct the study.

DATA COLLECTION PROCEDURE

Formal permission was obtained from the medical officer Kovilpayalam, Primary Health Centre and village head to conduct the study in Kovilpalayam. Nature, purpose and duration of the study was explained to the clients. The study was conducted for a period of 30 days. The samples were selected by using non probability convenience sampling technique on the basis of selection criteria. Among 40 samples, 20 samples were considered as experimental group and 20 samples were considered as control group.

After that the investigator collected demographic data from the type 2 diabetic clients and monitored fasting blood sugar level in experimental and control group by using glucometer. Then 10 grams of curry leaves powder mixed with 100ml of warm water and given to experimental group for 30 days. At the end of the 30^{th} day fasting blood sugar level was monitored in experimental and control group.

PLAN FOR DATA ANALYSIS

The investigator adopted descriptive and inferential statistics to analyze the data. The demographic variables were analyzed by using frequency and percentage. The effectives of curry leaves powder on control of blood sugar level and association between demographic variables and pretest score of blood sugar level were analyzed by using independent 't' test and paired 't' test and chi-square (X^2) test respectively.

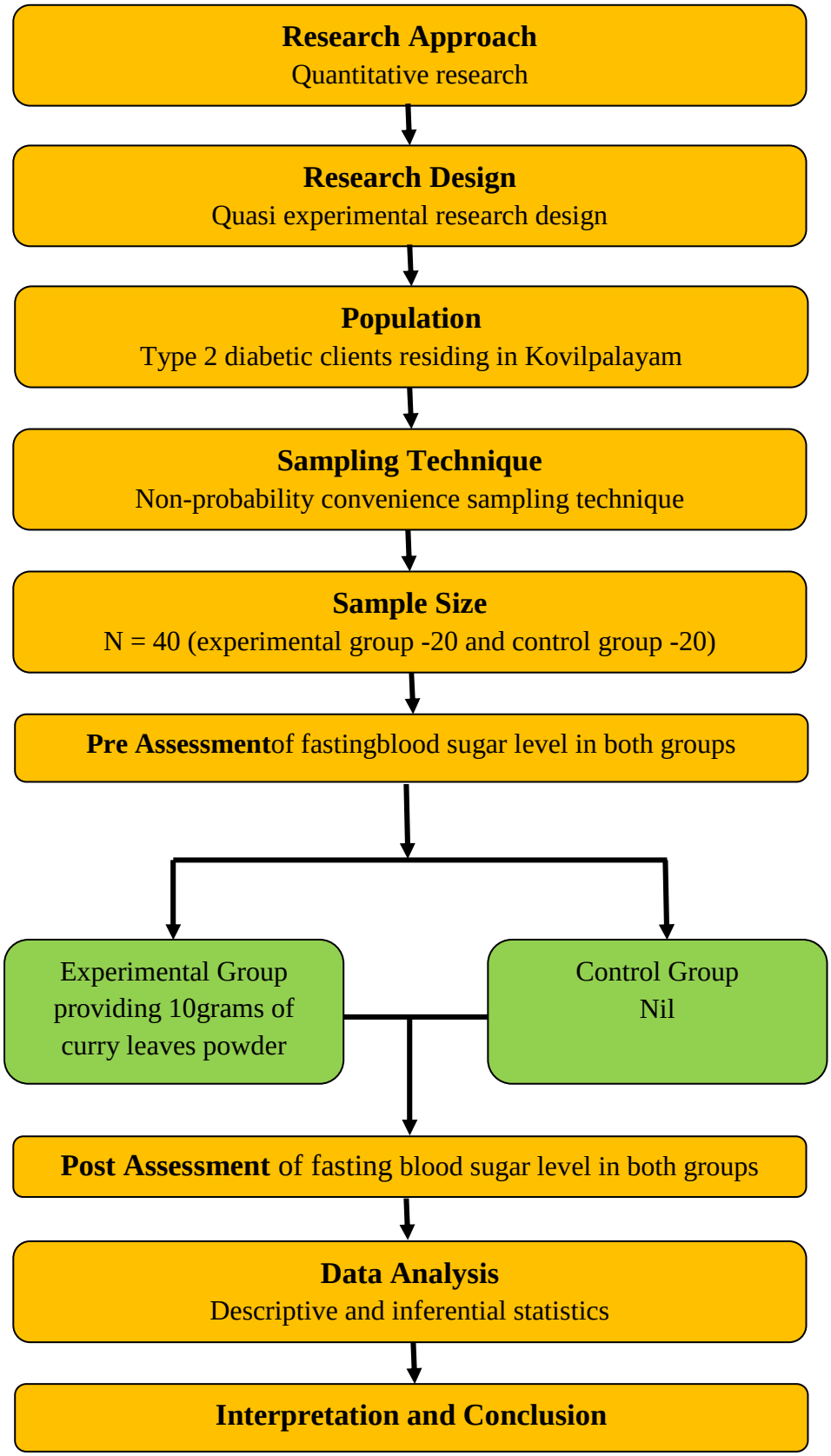

Figure :4The Overall View of Research Methodology

CHAPTER - IV

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

This chapter deals with analysis and interpretation of the data collected from type2 diabetic clients residing in Kovilpalayam, Coimbatore, to assess the effectiveness of curry leaves powder on control of blood sugar among type2 diabetic clients. The findings of the study are based on the descriptive and inferential statistic analyses were presented under the following findings.

Section-I Description of demographic variable of type2 diabetic clients in control group and experimental group.

Section-II Description of statistical values of blood sugar level of type2 diabetic clients in control and experimental group.

a. Comparison of pretest level of blood sugar among type2 diabetic clients in control group and experimental group.
b. Comparison of post test level of blood sugar among type2 diabetic clients in control group and experimental group.
c. Comparison of pre test and post test level of blood sugar in experimental group.

Section-III Association of pretest level of blood sugar scores with demographic variables among type2 diabetic clients in experimental group.

SECTION I

Table 1 Description of demographic variables of Type2 diabetic clients in control group and experimental group.

Sl No.	Demographic Variables	Control Group (n=20)		Experimental group (n=20)	
		f	%	*f*	%
1	Age				
	a) 30 – 39 years	5	25%	1	5%
	b) 40 – 49 years	6	30%	7	35%
	c) 50 – 59 years	4	20%	7	35%
	d) ≥60 years	5	25%	5	25%
2	Sex				
	a) Male	12	60%	13	65%
	b) Female	8	40%	7	35%
3	Hereditary				
	a) 1st Degree relatives	11	55%	10	50%
	b) 2nd Degree relatives	8	40%	5	25%
	c) Nil	1	5%	5	25%
4	Body Mass Index (BMI)				
	a) <25kg/m^2	2	10%	3	15%
	b) 25-29.9kg/m^2	16	80%	11	55%
	c) ≥30kg/m^2	2	10%	6	30%
5	Education				
	a) Illiterate	7	35%	7	35%
	b) Primary School	3	15%	2	10%
	c) Secondary School	4	20%	3	15%
	d) Higher Secondary School	6	30%	4	20%
	e) Graduate	0	0	4	20%

(Table 1 Continues)

(Table 1 Continued)

6	Occupation				
	a) Un employee	10	50%	8	40%
	b) Self employee	1	5%	9	45%
	c) Government employee	0	0	0	0
	d) Private employee	9	45%	3	15%
7	Religion				
	a) Hindu	12	60%	20	100%
	b) Christian	7	35%	0	0
	c) Muslim	1	5%	0	0
8	Monthly Family Income				
	a) 5000 – 7000	9	45%	1	5%
	b) 7001 – 9000	10	50%	7	35%
	c) 9000 and above	1	5%	12	60%
9	Duration if illness				
	a) 0 -1 years	2	10%	2	10%
	b) 2 -3 years	5	25%	8	40%
	c) 4 -5 years	5	25%	2	10%
	d) ≥6 years	8	40%	8	40%
10	Food pattern with intake of rice				
	a) 1 time per day	0	0	9	45%
	b) 2 times per day	11	55%	7	35%
	c) 3 times per day	9	45%	4	20%
11	Physical activity				
	a) Brisk walking	7	35%	11	55%
	b) Cycling	0	0	0	0
	c) Household activity	10	50%	2	10%
	d) Occupational activity	3	15%	7	35%

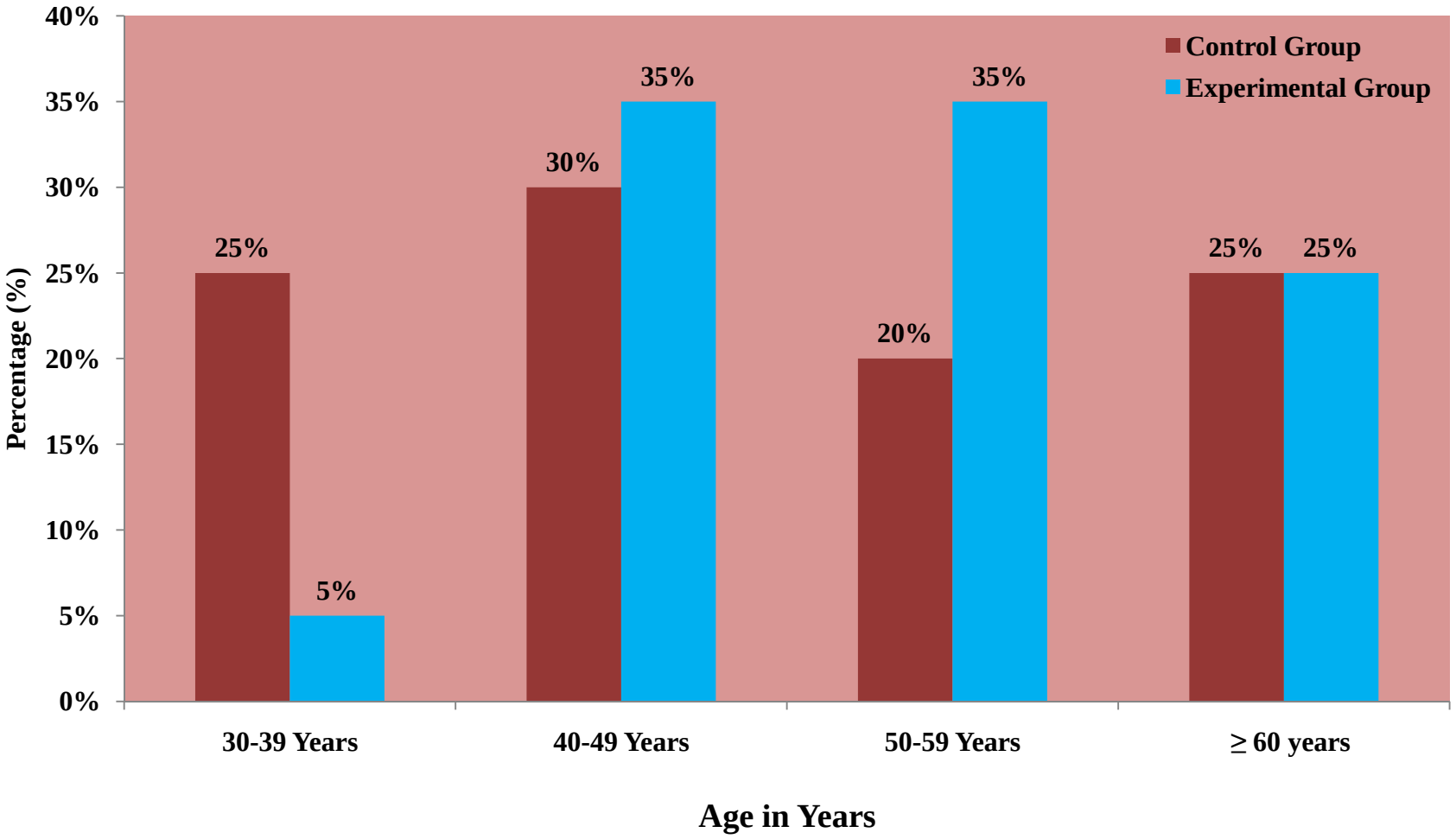

Figure .5 Distribution of Demographic variables according to age in Control andExperimental Group

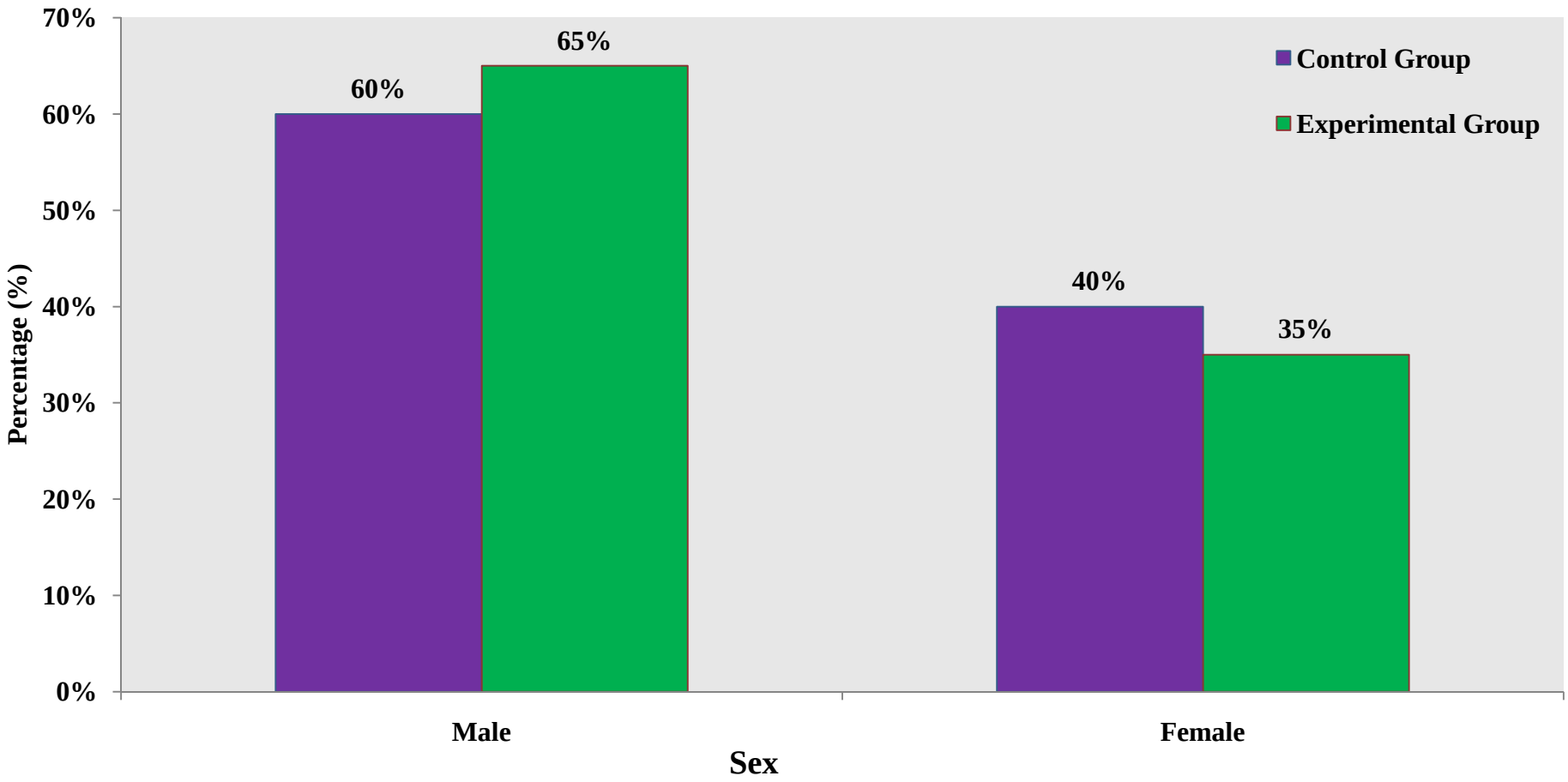

Figure .6 Distribution of Demographic variables according to sex in Control and Experimental group

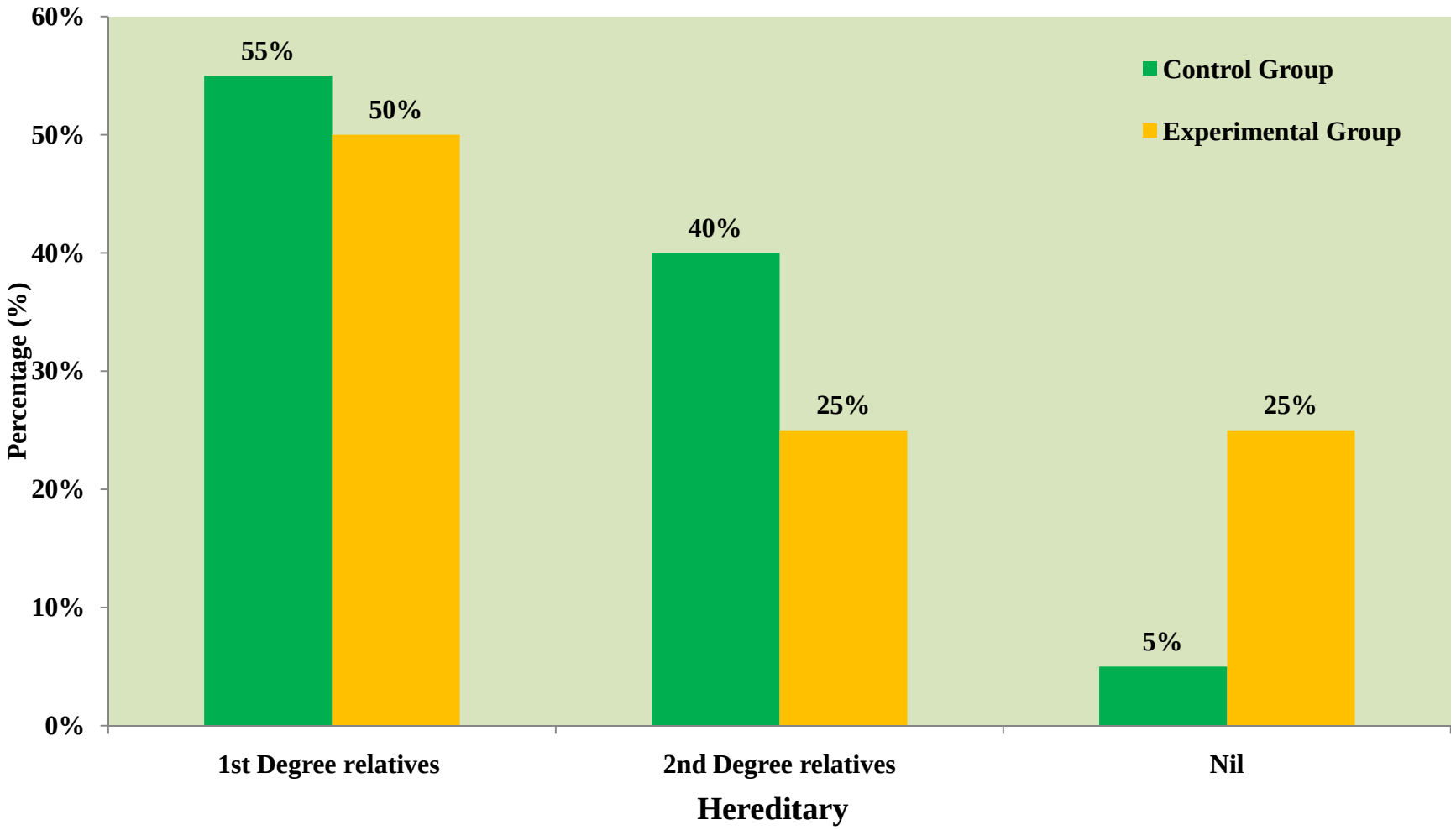

Figure .7 Distribution of Demographic variables according to Hereditary in Control and Experimental group

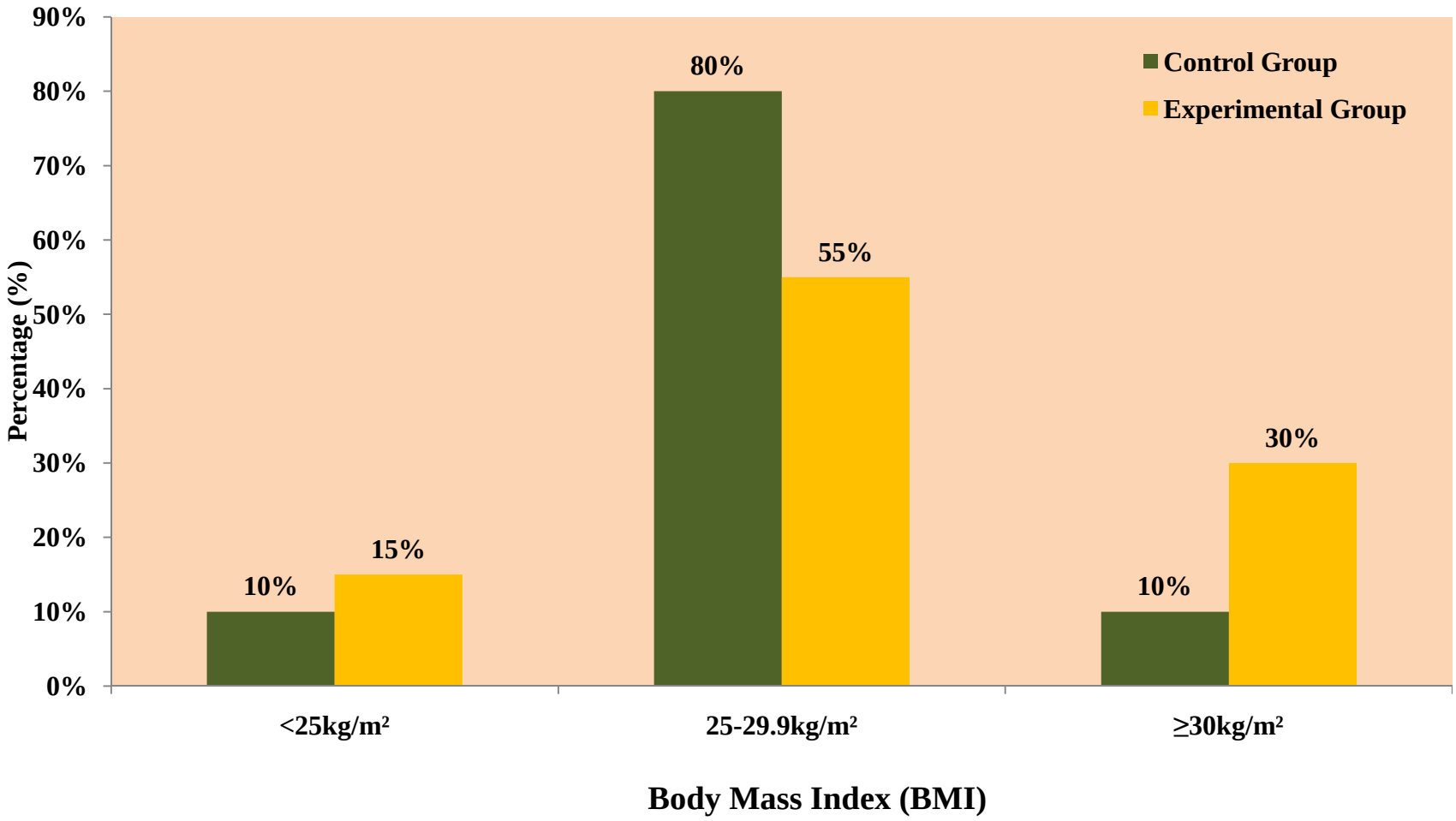

Figure .8 Distribution of Demographic variables according to BMI in Control and Experimental group

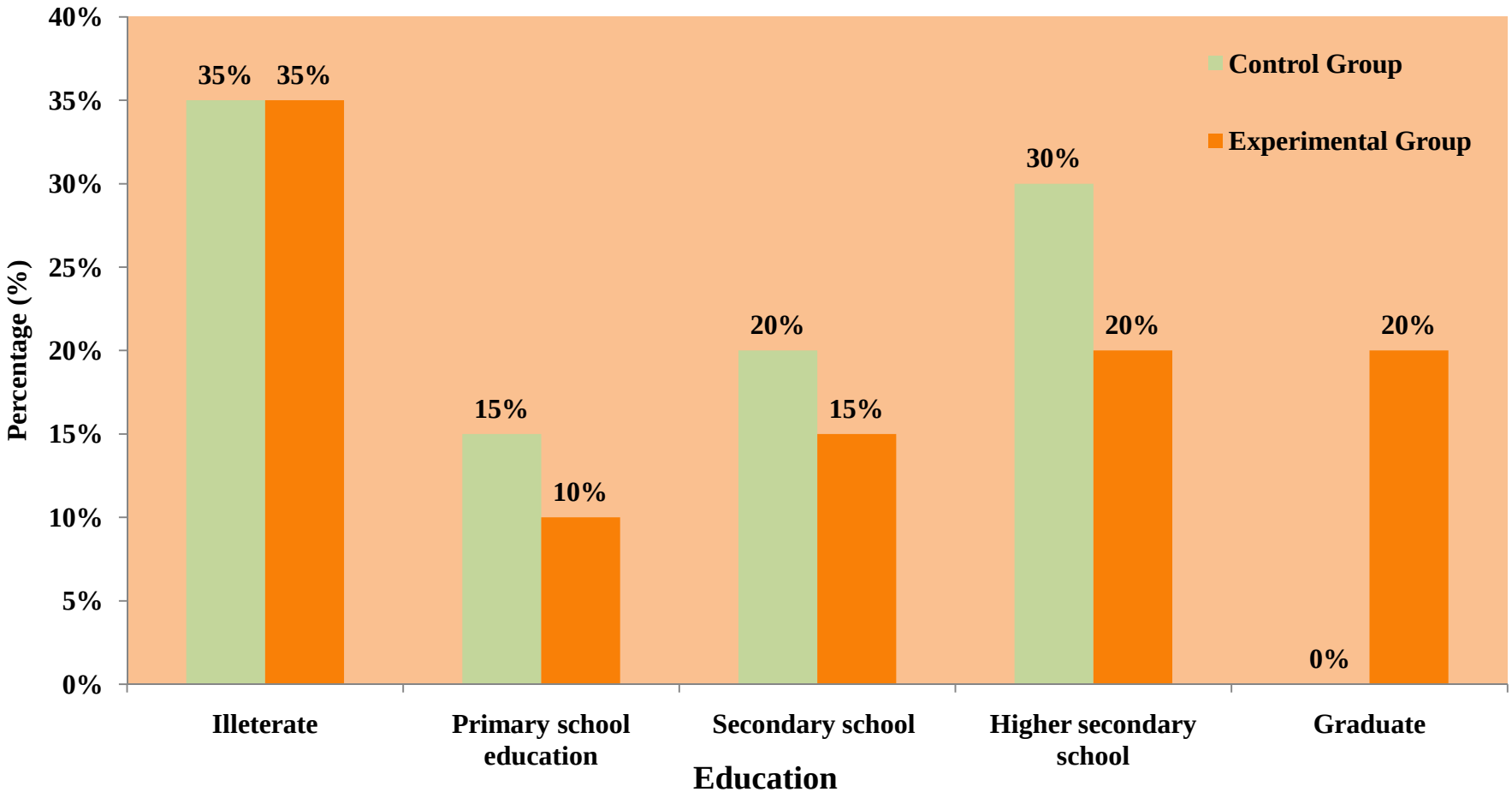

Figure .9 Distribution of Demographic variables according to Education in Control and Experimental group

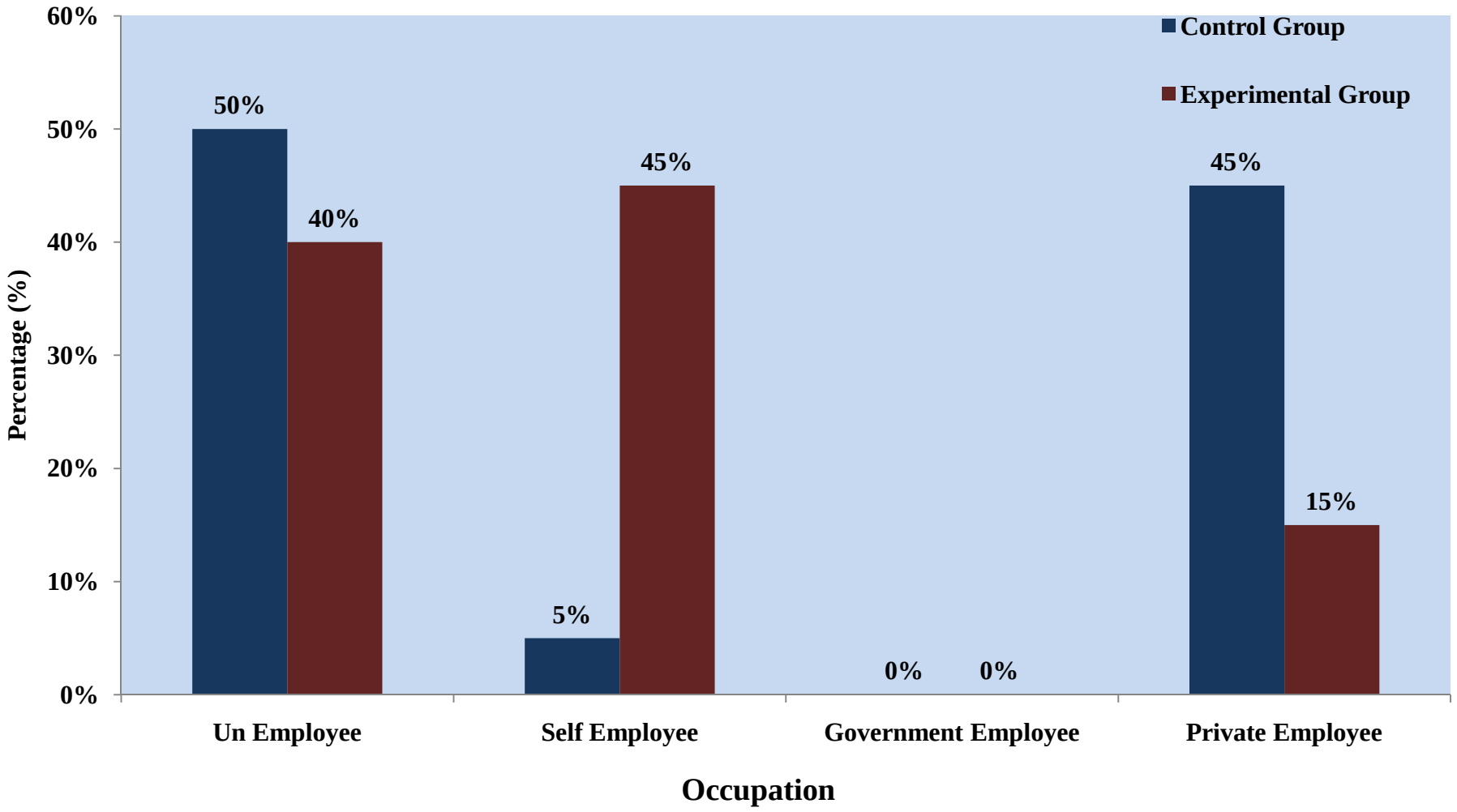

Figure .10 Distribution of Demographic variables according to Occupation in Control and Experimental group

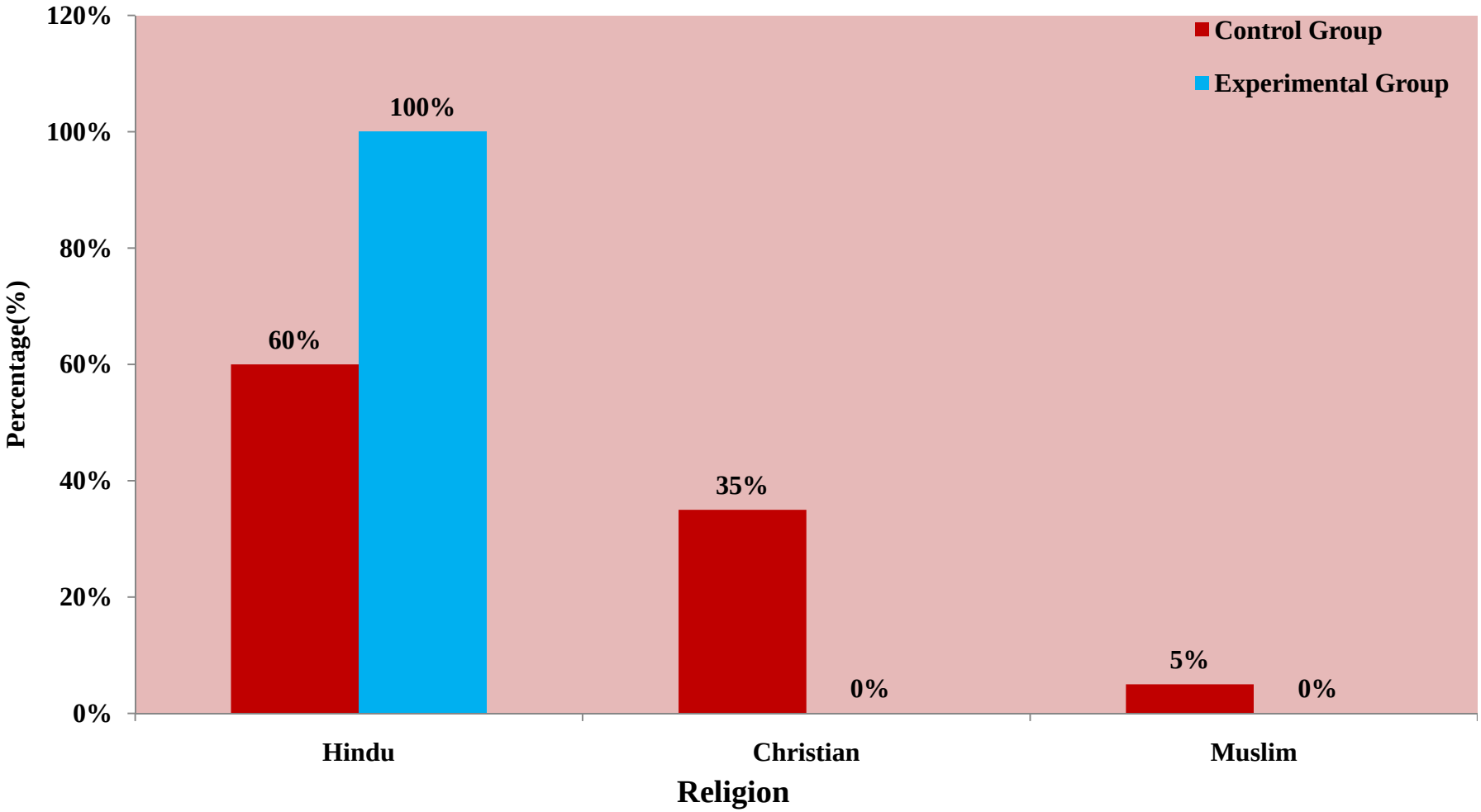

Figure .11 Distribution of Demographic variables according to Religion in Control and Experimental group

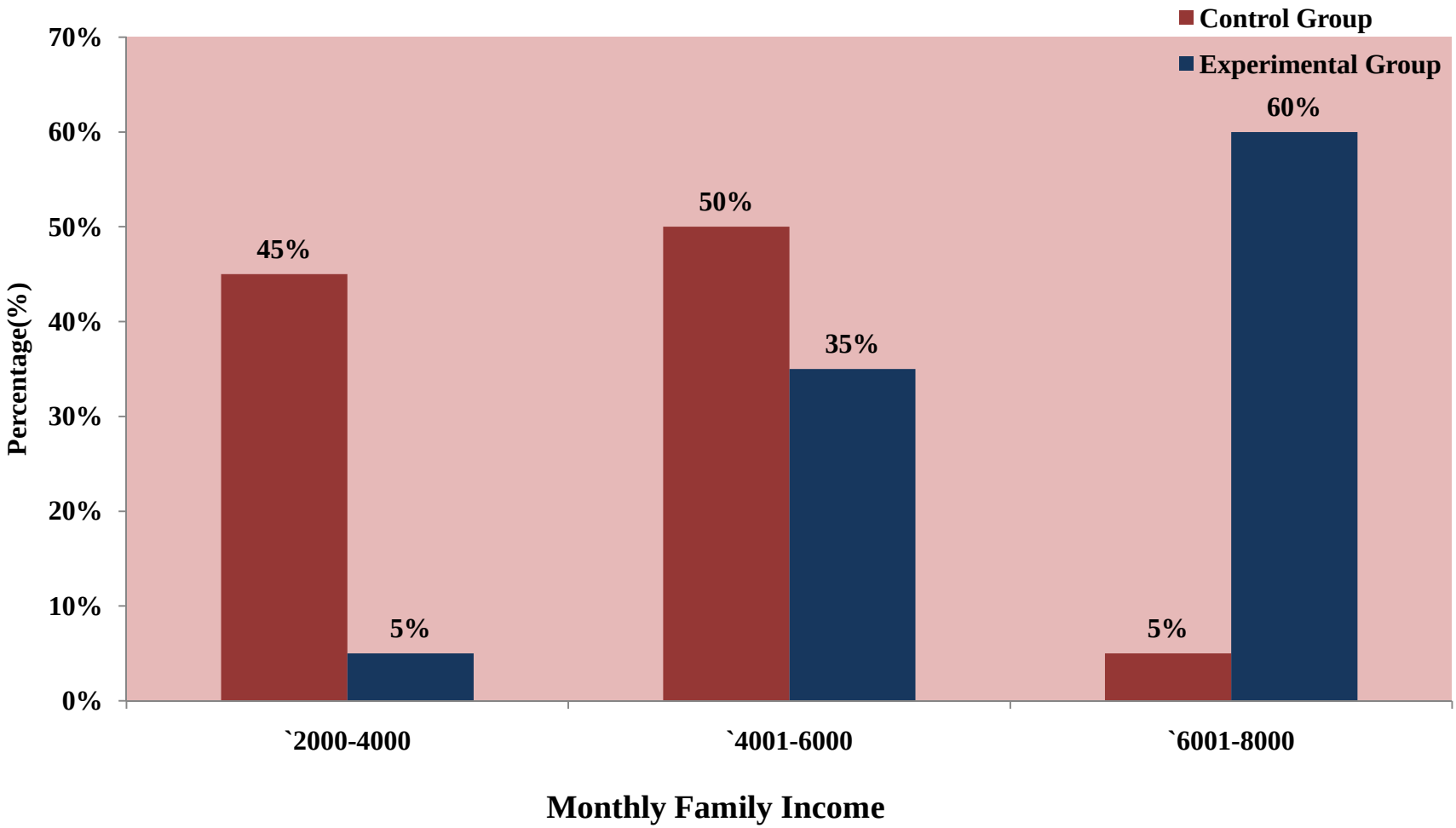

Figure .12 Distribution of Demographic variables according to Monthly Family Income in Control and Experimental group

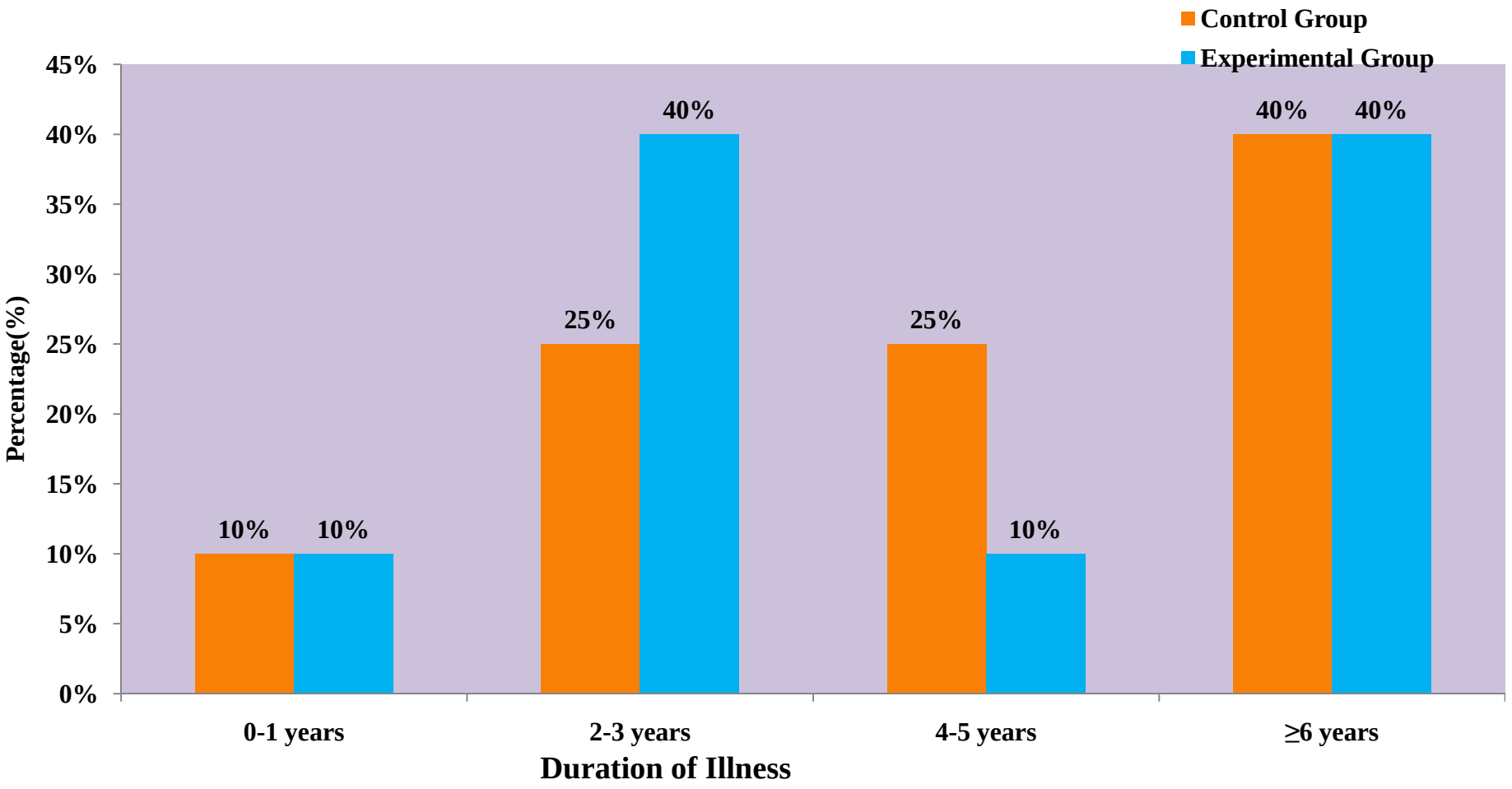

Figure .13Distribution of Demographic variables according to Duration of Illness in Control and Experimental group

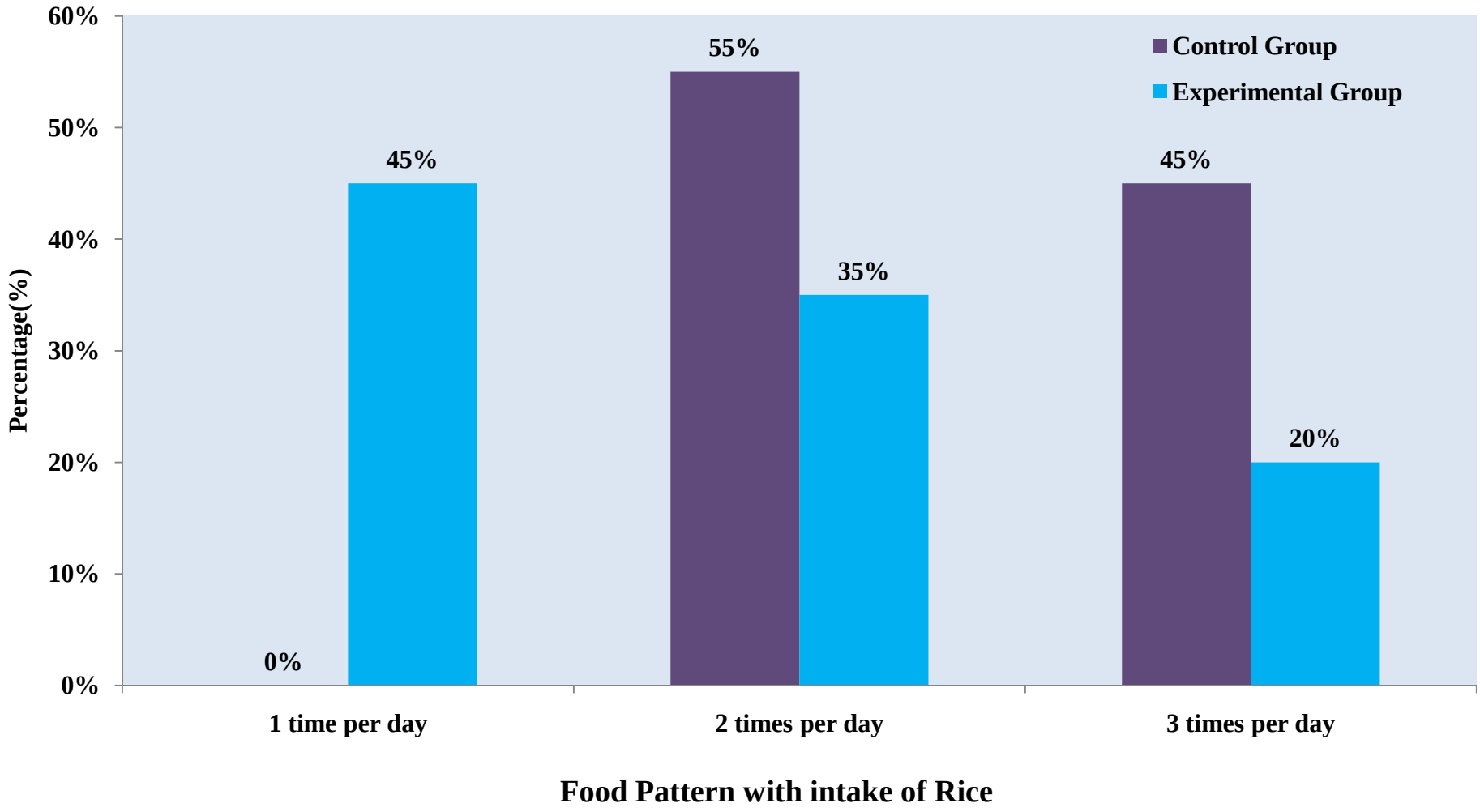

Figure .14 Distribution of Demographic variables according to Food Pattern with intake of Rice in Control and Experimental group

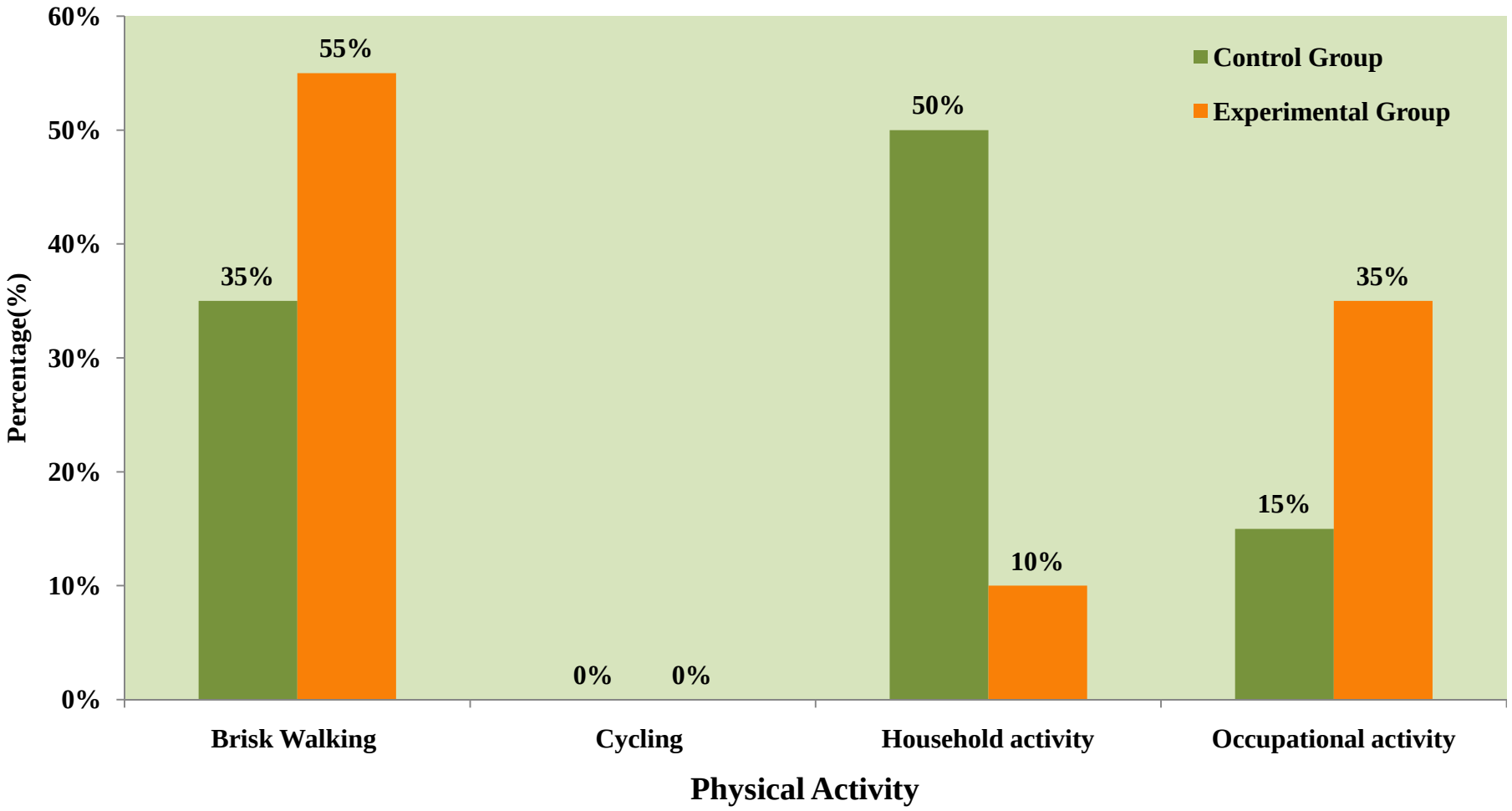

Figure .15 Distribution of Demographic variables according to Physical Activity in Control and Experimental group

SECTION – II

Table.2 Comparison of Pretest Level of Blood Sugar Among Type 2 Diabetic Clients in Control Group and Experimental Group

(n = 40)

S.No.	Pretest Values of Blood Sugar	Mean	SD	't' Value
1.	Control Group	133.35	9.37	0.7584
2.	Experimental Group	135.65	9.139	

Table 2 shows that for 38 degrees of freedom and at 0.05% level of significance, the table value was 1.686 and the calculated value was 0.7584 which is less than the table value. Hence, there was no significant differences between blood sugar level in control group and experimental group before providing of curry leaves powder. So homogeneity is maintained between the groups.

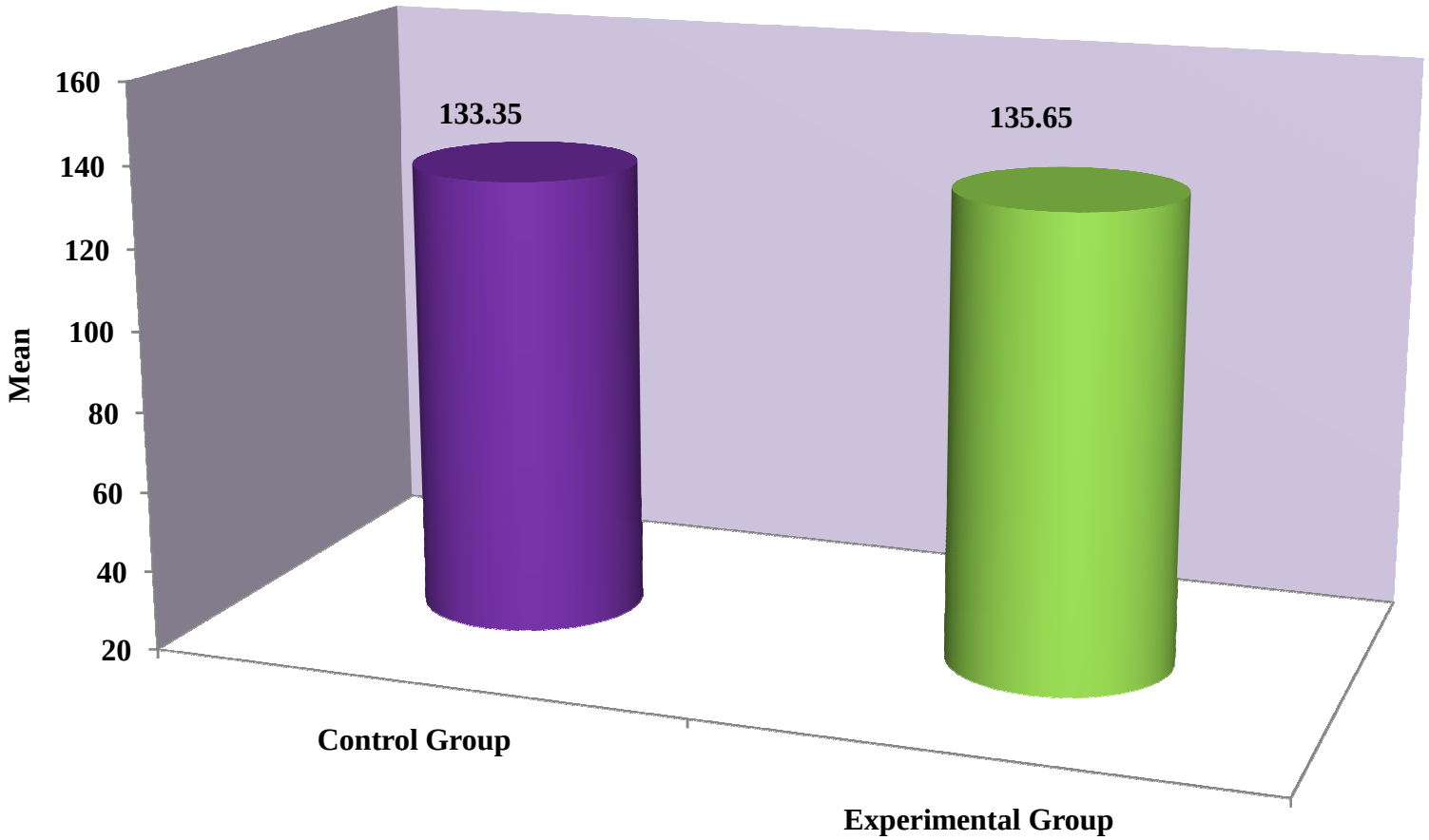

Figure .16 Distribution of Statistical mean value of level of Blood Sugar for Control and Experimental Group in Pretest

Table.3 Comparison of Post Test Level of Blood Sugar Among Type 2 Diabetic Clients in Control Group and Experimental Group

(n = 40)

S.No.	Post Test Values of Blood Sugar	Mean	SD	't' Value
1.	Control Group	134.2	8.090	6.22*
2.	Experimental Group	118.1	7.783	

* Significant at 0.05 level

Table 3 shows that for 38 degrees of freedom and at 0.05% level of significance, the table value was 1.686 and the calculated value was 6.22, which is greater than the table value and hence there was a significant differences between blood sugar level in control and experimental group after providing of curry leaves powder. It is concluded that curry leaves powder is effective in control of blood sugar level in type 2 diabetic clients.

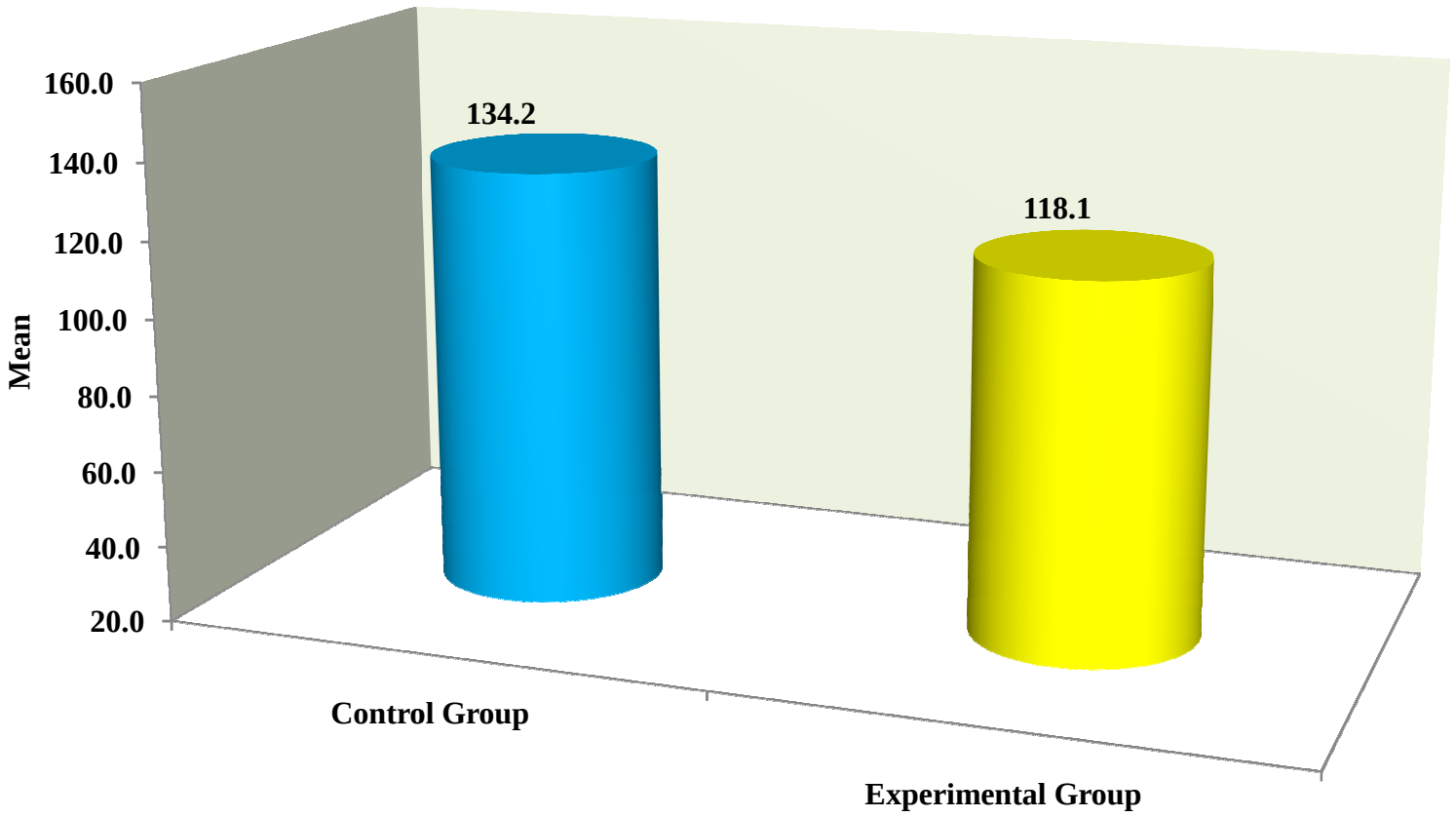

Figure .17 Distribution of Statistical mean value of level of Blood Sugar for Control and Experimental Group in Post test

Table.4 Comparison of Pretest and Post Test Level of Blood Sugar in Experimental Group

(n = 20)

S.No.	Level of Blood Sugar	Mean	SD	't' Value
1.	Pretest	135.65	9.139	13.16*
2.	Post test	118.1	7.783	

* Significant at 0.05 level

Table 4 shows for 19 degrees of freedom and at 0.05% level of significance, calculated value was 13.16, which is greater than table value. Hence, there was a significant difference existing between pre test and post test value i.e blood sugar was reduced significantly. So the above findings implied that curry leaves powder is effective on controlling the blood sugar level among type 2 diabetic clients.

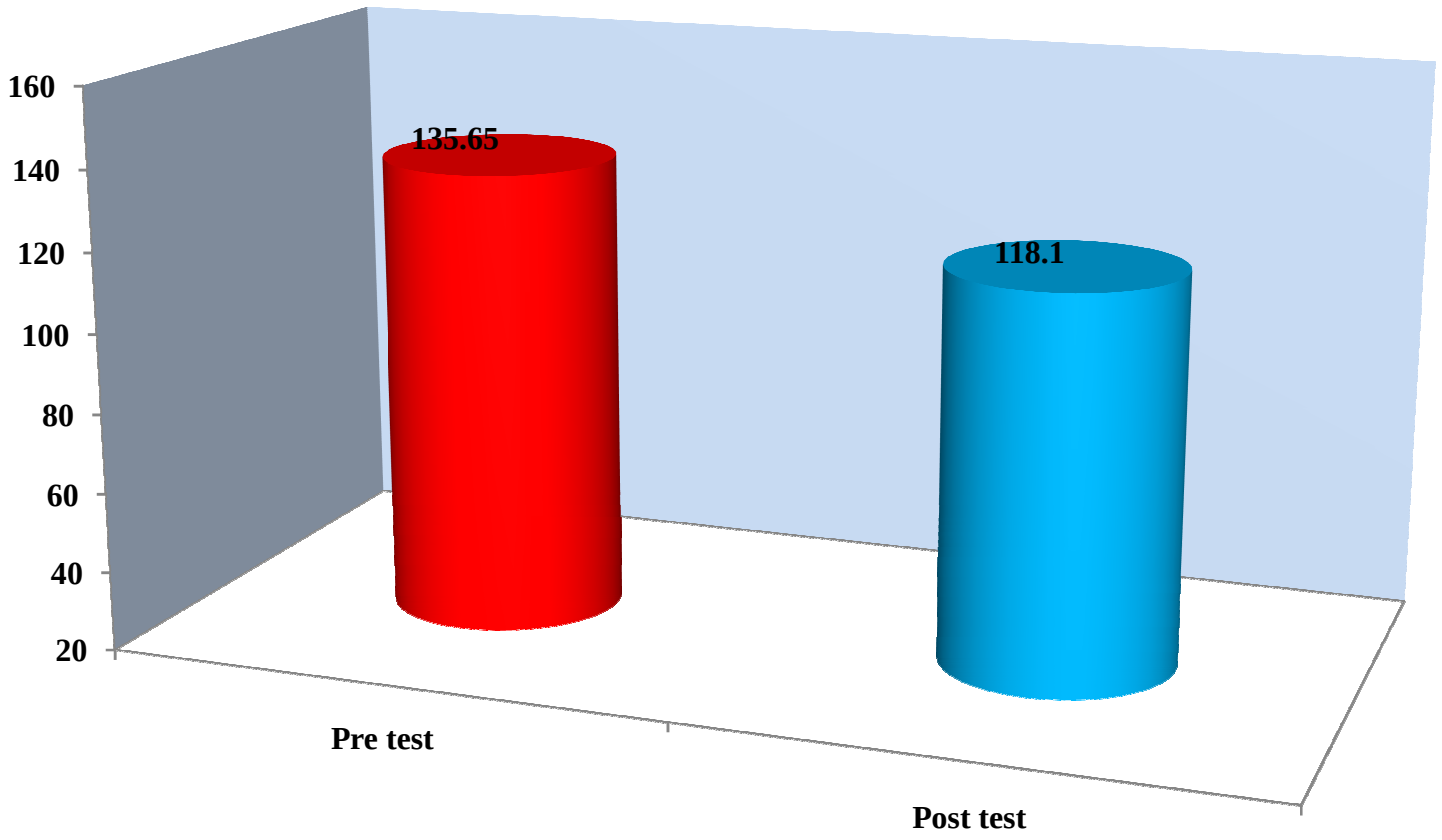

Figure .18 Distribution of Statistical mean value of level of Post test scores among Type 2 Diabetic Clients in Experimental Group

SECTION III

Table 5 Association of pre test score of level of blood sugar value with demographic variables Among Type 2 Diabetic Clients In Experimental Group.

(n=20)

S.No.	Demographic variables	Above mean	Below mean	d*f*	X^2
1	Age				
	e) 30 – 39 years	0	1		
	f) 40 – 49 years	3	4	3	0.917
	g) 50 – 59 years	2	5		
	h) ≥60 years	2	3		
2	Sex				
	c) Male	5	8	1	0.193
	d) Female	2	5		
3	Hereditary				
	d) 1st Degree relatives	3	7		
	e) 2nd Degree relatives	3	2	2	4.95
	f) Nil	1	4		
4	Body Mass Index (BMI)				
	d) <25kg/m^2	1	2	2	0.729
	e) 25-29.9kg/m^2	4	7		
	f) ≥30kg/m^2	1	5		
5	Education				
	f) Illiterate	2	5		
	g) Primary School	1	1		
	h) Secondary School	2	1	4	2.081
	i) Higher Secondary School	1	3		
	j) Graduate	1	3		

(Table 5 Continues)

(Table 5 Continued)

6	Occupation				
	e) Un employed	5	3		
	f) Self employed	3	6	3	3.785
	g) Government employee	0	0		
	h) Private employee	0	3		
7	Religion				
	d) Hindu	7	13		
	e) Christian	0	0	2	0
	f) Muslim	0	0		
8	Monthly Family Income				
	d) 5000 – 7000	0	1		
	e) 7001 – 9000	2	5	2	3.5
	f) 9000 and above	5	7		
9	Duration if illness				
	e) 0 -1 years	0	2		
	f) 2 -3 years	3	5	3	1.81
	g) 4 -5 years	1	1		
	h) ≥6 years	2	6		
10	Food pattern with intake of rice				
	d) 1 time per day	3	6		
	e) 2 times per day	4	3	2	3.668
	f) 3 times per day	0	4		
11	Physical activity				
	e) Brisk walking	4	7		
	f) Cycling	0	0	3	2.104
	g) Household activity	1	1		
	h) Occupational activity	2	5		

Table 5 shows that, there was no association between pre test score of level of blood sugar with demographic variables like age, sex, hereditary, Body Mass Index (BMI), education, occupation, religion, monthly income of the family, duration of illness, food pattern with intake of rice and physical activity.

CHAPTER - V

CHAPTER-V

RESULTS AND DISCUSSION

This is a Quasi Experimental study intended to know the effectiveness of curry leaves powder on control of blood sugar among type 2 diabetic clients at selected rural areas, Coimbatore. The data were analyzed by using descriptive and inferential statistics. The results of the study were discussed according to the objectives.

Pre Assessment of FBS level in Experimental and Control Group.

Blood sugar level was obtained by using glucometer. The mean pretest blood sugar level among control group and experimental group were 133.35 and 135.65. The finding implies that there was homogeneity exists among control group and experimental group before providing curry leaves powder.

The similar study was conducted by Amrithaveni and priya (2011). Effectiveness of curry leaves for 1 month to reduce the blood sugar among type 2 diabetic clients. The effectiveness was compared by monitoring the blood sugar value as pre test and post test by using glucometer in the 1^{st} and 30^{th} days. The pretest value of blood sugar level was 254.55.

Administering curry Leaves powder to the Experimental Group.

The samples were selected by non probability convenience sampling technique on the basis of selection criteria. On The first day, testing blood sugar value was monitored, then 10gms curry leaves powder was given to the experimental group for Thirty days. Post test fasting blood sugar was monitored on 30^{th} day.

The study was supported by Danille Hall (2013) on medical role of curry leaves in type2 diabetic patients. After 30 days of supplementation of 10gms of curry leaves per day, there is a decrease in level of fasting blood sugar level.

Post Assessment of FBS level in Experimental and control Group.

The findings after analysis revealed that the pretest mean values of blood sugar level among control group and experimental group were 134.3 and 118.1. This revealed that there was a significant difference exists between the pretest and post test mean value among experimental group and control group. It implies that curry leaves powder was effective in reducing blood sugar level in experimental group.

The similar study was conducted by Jing Xie, et. al,(2006) effectiveness of curry leaves to reduce blood glucose and it revealed that curry leaves may proved to be clinical importance in improving the management of type 2 diabetes.

Association of Pretest level of Blood Sugar scores with demographic variables among type 2 DM clients in Experimental group

There was no association between pretest score of level of blood sugar with demographic variables like age, sex, hereditary, Body mass Index (BMI), education, occupation, religion, monthly income of the family, duration of illness, food pattern with intake of rice and Physical activity.

CHAPTER - VI

CHAPTER VI

SUMMARY, CONCLUSION, NURSING IMPLICATIONS, LIMITATIONS AND RECOMMENDATIONS

Diabetes is a metabolic disease in which the body does not produce or properly respond to insulin, a hormone required to convert carbohydrate into energy for daily life. If the blood sugar level is not maintained properly that leads to micro and macro vascular complications include angiopathy, cardiomyopathy, neuropathy, retinopathy, nephropathy and amputations leading to significant mortality, morbidity and poor quality of life. Keeping this point in view, Quasi experimental study was conducted to assess the effectiveness of curry leaves power on control of blood sugar among type 2 diabetic clients.

The following objectives were set for the study.

- To monitor the level of blood sugar in experimental group and control group.
- To provide curry leaves powder to the experimental group.
- To re-monitor the level of blood sugar in experimental group and control group.
- To associate the pretest findings with demographic variables in experimental group

Hypothesis set for the study

There was a significant effect on control of blood sugar after providing curry leaves powder to the experimental group.

Major findings of the study were as follows.

- The pre test mean scores of control group and experimental group were 133.35 and 135.65.

- The obtained ‘t’ value of level of blood sugar among control and experimental group in pre test were 0.758
- The post test mean scores of control group were 134.2 and 118.1.

  The obtained ‘t’ value of level of blood sugar among control group and experimental group in post test were6.22.
- The obtained ‘t’ value of level of blood sugar among experimental group was 13.16.

CONCLUSION

The post test level of blood sugar among type 2 diabetic clients who received curry leaves powder was significantly lesson than who did not received curry leaves powder. So the curry leaves powder has significant reduction in the level of blood sugar. Here alternative hypothesis was accepted.

NURSING IMPLICATIONS

The findings of the study have implications on community health nursing practice, nursing education and nursing research.

Community Health Nursing Practice

- Community health nurse should understand the importance of intervention measures like curry leaves powder to reduce the type 2 diabetes mellitus.
- Community health nurse can be encouraged to take curry leaves powder to maintain normal blood sugar in order to reduce various complications associated with type 2 diabetes mellitus.
- Providing curry leaves powder can be included as an alternative treatment regimen in type 2 diabetes mellitus.

- Community health nurse can educate the people regarding use of curry leaves powder to control the type 2 diabetes mellitus.
- Community health nurse administration should conduct awareness programme about alternative treatment for type 2 diabetes mellitus.

NURSING ADMINISTRATION

- The nurse administrator should motivate the community health nurses in participating various educational programme.
- Periodic screening programme, role play, health education, awareness creation programme should be arranged regarding prevention of diabetes mellitus, and it's complication and influence of complimentary therapies in reducing the level of blood sugar to make nursing professional competent enough to meet the ever changing needs of the society.

NURSING EDUCATION

- Nursing curriculum is a means through which future nurses are prepared. The emphasis needs to be planned on preventive and promotive health practice.
- The results of the study emphasis learner to utilize the knowledge of providing of curry leaves powder in controlling the blood sugar level. This procedure can be incorporated in the nursing curriculum. Periodic conference, seminar, symposium etc can be arranged on effect of curry leaves powder in controlling the blood sugar level.

NURSING RESEARCH

- The findings of the present study can be a foundation to conduct study on large population to strongly prove the efficiency of curry leaves powder on control of blood sugar.
- It can be used for evidence based nursing practice as a rising trend.
- Exclusive research must be conducted in this area to identity the physiological effect of curry leaves powder on type 2 diabetes mellitus.
- It can be used as a motivation for nurses to conduct research on comparing different alternative treatment modalities for type 2 diabetes mellitus.

LIMITATION

- The limited sample size place limitation on the generalization of the study findings.
- The study is limited to type 2 diabetic clients who are residing in Kovilpalayam, Coimbatore .
- The researcher could not use randomized sampling technique in this study.

RECOMMENDATIONS

- Similar kind of study can be conducted for a large group.
- Comparative study can be conducted for type 2 diabetic clients with curry leaves and fenugreek seed powder.
- Comparative study can be conducted for type 2 diabetic clients with dried and fresh curry leaves powder.
- The similar study can be conducted as a comparative study between type 2 diabetes mellitus.

- Similar study can be conducted with different dose and different method of supplementation to reduce the blood sugar level.

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APPENDICES

PERMISSION LETTER FOR RESEARCH STUDY

To

Through:
The Principal ,
Ppg College Of Nursing,
Coimbatore -35

Respected Sir / Madam.

Sub: Seeking Permission For Conducting Research Study.

I am student of II-year M.Sc Nursing, PPG College of Nursing, affiliated to the Tamilnadu Dr.M.G.R Medical university, Chennai. I have taken the specialization in Community Health Nursing.

"EFFECTIVENESS OF CURRY LEAVES POWDER ON CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETIC CLIENTS AT SELECTED RURAL AREAS IN COIMBATORE."

I request you to kindly permit me to conduct my study in hospital. Hope you will consider my requisition and do the needful.

Thanking you

Yours truly,

Date:
Place:

PPG COLLEGE OF NURSING

(A Unit of P. Perichi Gounder Memorial Charitable Trust)
An ISO 9001 : 2008 Certified Institution
Affiliated to The Tamilnadu Dr. MGR Medical University, Chennai
Recognised by Indian Nursing Council, New Delhi. (Cr. No. : 18-1183/2000, INC Resl. No.172) and
Tamilnadu Nursing Council, Chennai.
9/1, Keeranatham Road, Saravanampatty, Coimbatore - 641 035.Tamilnadu, India
✆ : 0422 - 2669000 Fax : 0422 - 2669333 E-mail : ppgcollege@gmail.com **Website : www.ppg.edu.in**

REQUESITION LETTER FOR CONTENT VALIDITY

From

II-year M.Sc Nursing,

PPG College Of Nursing,

Coimbatore-35

To

Through The Principal ,PPG college of nursing,

Coimbatore - 35

Respected Sir / Madam.

Sub: Requisition for expert opinion and suggestion for content validity of the tool.

I am student of II-year M.Sc Nursing, PPG college of Nursing, affiliated to the Tamilnadu Dr.M.G.R Medical University ,Chennai . As a partial fulfilment of M.Sc Nursing programme.I am conducting

TOPIC : EFFECTIVENESS OF CURRY LEAVES POWDER ON CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETIC CLIENTS AT SELECTED RURAL AREAS IN COIMBATORE.

Herewith I have enclosed the developed tool for content validity for your expert opinion and possible suggestion. I will be very kind of you to return the same to the undersigned at the earliest possible.

Thanking you

Yours Truly,

Date:
Place

CERTIFICATE FOR ENGLISH EDITING

This is to certify that the study conducted by **Mrs. Lincy P Varghese** M.Sc Nursing II year Student**,** PPG college of nursing, Coimbatore -35 on the topic of **"EFFECTIVENESS OF CURRY LEAVES POWDER ON CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETIC CLIENTS AT SELECTED RURAL AREAS IN COIMBATORE."** has been edited by me for English language appropriateness.

SIGNATURE

NAME :

INSTITUTION :

PLACE :

CERTIFICATE FOR TAMIL EDITING

This is to certify that the study conducted by **Mrs. Lincy P Varghese** M.Sc Nursing II year Student**,** PPG college of nursing, Coimbatore -35 on the topic of **"EFFECTIVENESS OF CURRY LEAVES POWDER ON CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETIC CLIENTS AT SELECTED RURAL AREAS IN COIMBATORE."** has been edited by me for Tamil language appropriateness.

SIGNATURE

NAME :

INSTITUTION :

PLACE :

CERTIFICATE FOR CONTENT VALIDITY

This is to certify that the tool constructed by **Mrs. Lincy P Varghese**. M MSc Nursing II year PPG College of Nursing, Coimbatore. Which is to be used in her study titled **"EFFECTIVENESS OF CURRY LEAVES POWDER ON CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETIC CLIENTS AT SELECTED RURAL AREAS IN COIMBATORE."** has been validated by the undersigned. The suggestions and modification given by me will be incorporated by the investigator in concerned with their respective guide. Then she can proceed to do the research.

SIGNATURE WITH SEAL

NAME :
DESIGNATION :
COLLEGE :

PLACE :
DATE :

PPG COLLEGE OF NURSING

Format For the Content Validity

Name of the Expert :

Address :

Total Content for the tool :

Kindly validate each tool and tick wherever applicable

S.No	No.of Tool/Section	Strongly Agree	Agree	O.K	Not applicable	Need modification	Remarks

Remarks **Signature of the Expert with Date**

LIST OF EXPERTS

1.Dr.PADMAJA,M.D,
Department of Medicine,
Ashwin Hospital,
Coimbatore.

2.Prof.INDRANI,
Principal,
Nightingale College of Nursing,
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3.Prof.SALOMI,
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5.Assoc.Prof.PREMKUMAR,
Department of Community Health Nursing,
Sri Shakthi College of Nursing,
Karur.

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Similarity Found: 3%

Date: Saturday, July 27, 2019
Statistics: 174 words Plagiarized / 5988 Total words
Remarks: Low Plagiarism Detected - Your Document needs Optional Improvement.

CHAPTER – 1 INTRODUCTION "Good Health and good sense are two of life's greatest blessings" - Publilius Syrus Health as defined by the World Health Organization, is "a state of complete physical, mental and social well being and not merely the absence of disease or infirmity". [W.H.O] Rashtriya Kishor Swasthya Karyakaram (2019), Behavior and lifestyle of Indians has seen a remarkable change due to extensive economic and social development, increase in technical knowledge and a revolution in information technology. Along with this the non communicable diseases are also growing in size.

Many studies have found that health problems are mostly related to stress. Stress seems to worsen or increase the risk of conditions like Obesity, Heart disease, Alzheimer's disease, Diabetes, Depression, Gastrointestinal problems, and 'Asthma'. William C.Shiel Jr, MD, FACP, FACR (2018), Diabetes is a group of metabolic disorders characterized by abnormal metabolism which results most notably in hyperglycemic due to defects in insulin secretion, insulin action or both.

SECTION –A

DEMOGRAPHIC VARIABLES

Instructions

Read the following questions carefully and give (✓)in a given boxes for correct answer.

Sample No. _____

1) Age
   a) 30-39 years ☐
   b) 40-49 years ☐
   c) 50-59 years ☐
   d) ≥60 years ☐

2) Sex
   a) Male ☐
   b) Female ☐

3) Hereditary
   a) 1st Degree relatives ☐
   b) 2nd Degree relatives ☐

4) Body Mass Index (BMI)
   a) <25kg /m^2 ☐
   b) 25-29.9kg/m^2 ☐
   c) ≥30kg/m^2 ☐

5) Education

a) Illiterate ☐

b) Primary School ☐

c) Secondary School ☐

d) Higher Secondary School ☐

e) Graduate ☐

6) Occupation

a) Unemployed ☐

b) Self employed ☐

c) Government Employee ☐

d) Private Employee ☐

7) Religion

a) Hindu ☐

b) Christian ☐

c) Muslim ☐

8) Monthly family income

a) Rs.5000-7000 ☐

b) Rs.7001-9000 ☐

c) Rs.9000 and above ☐

9) Duration of illness

a) Newly diagnosed ☐

b) 1-3 years ☐

c) 4-6 years ☐

d) ≥6years ☐

10) Food pattern with intake of rice

a) 1 time per day ☐

b) 2 times per day ☐

c) 3 times per day ☐

11) Physical Activity

a) Brisk walking ☐

b) Cycling ☐

c) Household activity ☐

d) Occupational activity ☐

SECTION II

OBSERVATION SCHEDULE ON THE GLUCOMETER

Sample No.	Experimental Group		Control Group	
	Pre test (1st day)	Post test (30th day)	Pre test (1st day)	Post test (30th day)
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				
15				
16				
17				
18				
19				
20				

பகுதிஅ

முறையானநேர்காணல்படிவம்

விதிமுறை

பின்வரும்வினாக்களைகவனமாகபடித்துசரியானவிடையைஅருகில்உள்ளகட்டத்தில்

✓ செய்யவும்

1.வயது(வருடம்)

அ) 30-39 ☐

ஆ) 40-49 ☐

இ) 50-59 ☐

ஈ) ≥ 60 ☐

2.பாலினம் ☐

அ)ஆண் ☐

ஆ)பெண்

3.பரம்பரை

அ)முதல்நிலைஉறவுகள் ☐

ஆ)இரண்டாம்நிலைஉறவுகள் ☐

4.உடல்பருமன்

அ) < 25கி / மீ ^{2} ☐

ஆ)25-29.9கி / மீ^{2} ☐

இ)≤ 30கி / மீ^{2} ☐

5.கல்வி

அ)படிக்காதவர்கள் ☐

ஆ)தொடக்ககல்வி ☐

இ)நடுநிலைகல்வி ☐

ஈ)மேல்நிலைகல்வி ☐

உ)பட்டபடிப்பு ☐

6.வேலை தகுதி

அ)வேலையின்மை ☐

ஆ)கூலிதொழில் ☐

இ)அரசுஊழியர் ☐

ஈ)தனியார்ஊழியர் ☐

7.மதம் ☐

அ)இந்து ☐

ஆ)கிறிஸ்துவம் ☐

இ)முஸ்லீம்

8.குடும்பமாதவருமானம் ☐

அ) $5000-7000 ☐

ஆ) $ 7000-9000 ☐

இ) $9000 மற்றும் மேல்

9.நோயின்காலம்

அ)1வருடம் ☐

ஆ)1-3வருடங்கள் ☐

இ)4-6 வருடங்கள் ☐

ஈ)≤ 6வருடங்கள் ☐

10.ஒருநாளைக்குஎத்தனைமுறைசாப்பாடுஎடுத்துகொள்கிறீர்கள்

அ)ஒருமுறை ☐

ஆ)இரண்டுமுறை ☐

இ)மூன்றுமுறை ☐

11.உடல்செயல்பாடு

அ)நடைபயிற்சி ☐

ஆ)மிதிவண்டிஓட்டுதல் ☐

இ)வீட்டுவேலை ☐

ஈ)அலுவலகபணி ☐

PROTOCOL

Curry Leaves Powder on Control of Blood Sugar

Introduction

Curry leaves have a special place in ayurvedic medicine because of its health benefits and also considered as one of the main ingredients of Indian foods. Curry leaves powder is to be effective treatment for type 2 diabetes mellitus to control the blood sugar.

Type 2 Diabetes Mellitus

Type 2 diabetes mellitus, previously called noninsulin dependent diabetes mellitus or adult onset diabetes, also appears to be a heterogenous disorder involving both genetic and environmental factors with a glucose concentration is greater than 110 milligram per deciliter.

Curry Leaves

MurrayaKoenigii is known as ‘curry patta’ or ‘curry leaves’ and is widely use as a spice and condiment in India and other tropical countries. It belongs to the family Rutaceae (citrus family). Ayurveda mentions its use as a treatment for type 2 diabetes.

Goal

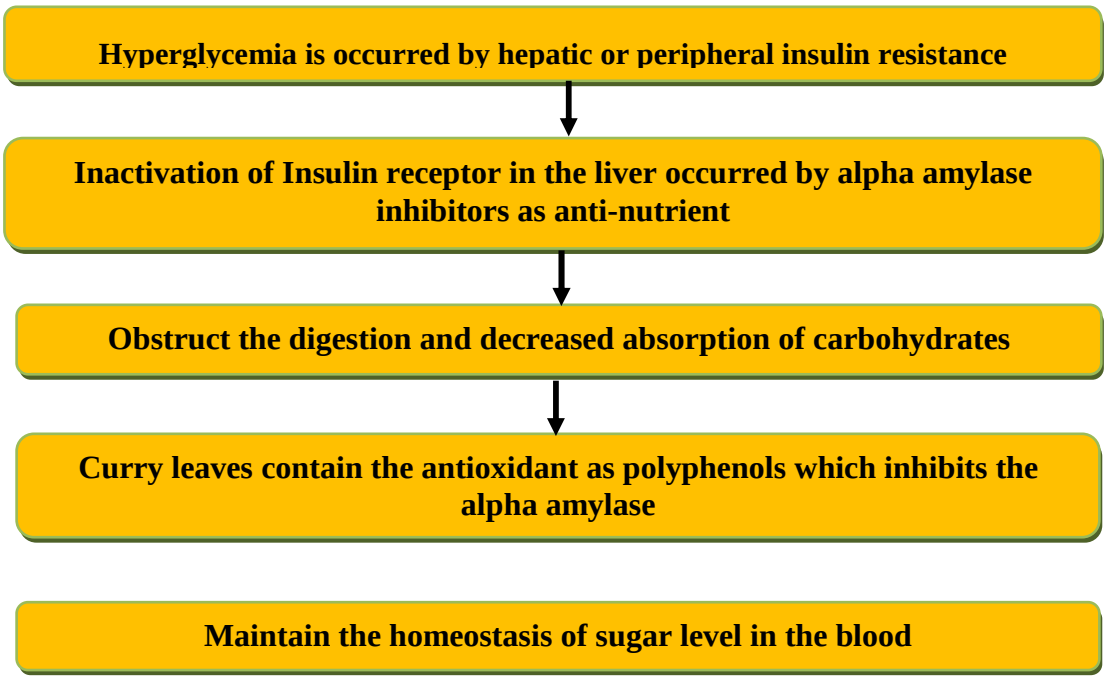
To control the blood sugar among type 2 diabetic clients.

Purposes

- Providing curry leaves powder orally evoked a potent anti-hyperglycaemic activity.
- Curry leaves has some of the properties which include much value as an antioxidant, antimicrobial, anti-inflammatory, hepatoprotective etc.

- Curry leaves powder has effect on decreased in both cholesterol as well as triglycerides.
- Several biological activities of curry leaves are efficacy against colon carcinogenesis, antimicrobial, dysentery and prevention of premature grey hairs.
- Curry leaves are also known to be good for hair, for keeping them healthy and long.
- Curry leaves health benefits also include relief from kidney pain, treatment of minor superficial skin injuries.
- Curry leaves possesses the qualities of the herbal tonic and can be consumed along with honey of buttermilk in strengthening the functions of the digestive system. As a treatment for diarrhea and dysentery.
- The fresh juice of curry leaves are also used as an eye treatment for certain eye disorders, especially in arresting the development of cataract.
- Curry leaves helps to reduce the discomfort of morning sickness. This condition is usually seen in the first trimester of pregnancy.

Mechanism



Ingredients for Curry Leaves Powder

- Curry leaves
- Fresh water

Preparation of Curry Leaves Powder

- Take the fresh curry leaves.
- Wash the curry leaves with clean water
- Keep the curry leaves under the sunlight shadow for 2-3 days to make the curry leaves crispy to grind easily.
- After grinding the curry leaves thoroughly and curry leaves powder are filtered by the strainer.
- 10 grams of curry leaves powder measured by using the weighing scale and packed it.

Procedure

- Explain the procedure to the client.
- Obtain the informed consent from the client.
- Take 10 grams of curry leaves powder and add to 100ml of warm water and given to type 2 diabetic clients.

Conclusion

Herbal treatments have been used for clients with Non-Insulin Dependent Diabetic Mellitus. Most of the scientific validation on Indian Plants such as curry leaves has proved the efficacy of controlling the blood sugar level without any side effects as oral hypoglycemic drugs.

EFFECTIVENESS OF CURRY LEAVES POWDER ON CONTROL OF BLOOD SUGAR AMONG TYPE 2 DIABETIC CLIENTS AT SELECTED RURAL AREAS IN COIMBATORE.