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A STUDY TO ASSESS THE EFFECTIVENESS OF CURRYLEAVES POWDER IN REDUCING BLOOD GLUCOSE AMONG TYPE II DIABETIC CLIENTS IN SELECTED RURAL AREA OFDAMAN

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ABSTRACT

Background: Curry leaves assist to manage diabetes because they have hypoglycemic effects by boosting the body's synthesis of insulin. Curry leaves' high fibre content slows down the conversion of carbs to glucose, which helps regulate blood sugar even more. Curry leaves are also a great addition to a low-GI diet for diabetics. **Objectives**: To assess the effectiveness of curry leaves powder in reducing blood glucose among type II diabetic clients in selected rural area of daman. **Methodology:** The Quantitative research approach and Quasi Experimental, pre-test post-test only design was used. 60 samples were collected by using thepurposive sampling technique. Out of 60 clients, 30 clients were selected for experimental group and 30 clients were selected for control group. Their demographic variables are collected structured interview schedule. 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 10 gm 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. **Result:** The result of the study, in experimental group pre-test mean score was 204.5667 and posttest mean score was 193.6667. The calculated 't' value (3.272), df=29 is greater than the table value (2.05) at 0.05 level of significance which is shows that there is a significant difference between pre-test and post test result to reducing the blood glucose level in experimental

group. This study conclude that curry leaves was effective in reducing blood glucose level. **Conclusion:** The finding of the study shows that the blood glucose level of clients with type II diabetes mellitus was not maintained properly before the administration of curry leaves. The post test score showed that significant decrease in the blood glucose level. Hence the curry leaves were an effective metho of reducing the blood glucose among type II diabetes clients.

KEYWORDS: Diabetes mellitus, Blood glucose, Curry leaves.

INTRODUCTION

Diabetes is a metabolic illness that raises blood sugar levels and can harm blood vessels, the heart, kidneys, eyes, nerves, and eyes over time. The most prevalent kind, type II diabetes, usually affects adults and is brought on by insufficient or resistant insulin production in the body. Insulin is produced by those with type II diabetes; however, it is not absorbed well by their bodies. In order to assist their bodies use glucose for energy, some patients with type II diabetes require injectable insulin or take diabetes medicines. Since 17% of all diabetic patients worldwide reside in India, the country is frequently referred to as the "world of diabetes." In India, there are currently over 80 million diabetic patients, and by 2045, that figure is predicted to rise to 135 million.[1]

The World Health Organization (WHO) introduced the worldwide Diabetes Compact in April 2021. This worldwide initiative aims to support low- and middle- income nations while promoting sustained gains in diabetes prevention and care. Together, national governments, UN agencies, nongovernmental organizations, businesses, academic institutions, philanthropic foundations, individuals with diabetes, and foreign donors are coming together under the compact to collaborate on a common goal of lowering the risk of diabetes and guaranteeing that everyone with the disease has access to fair, all-inclusive, reasonably priced, and high-quality care.[2]

Type II diabetes is the most common type of diabetes, accounting for around 90% of all diabetes. Type II diabetes is most commonly diagnosed on older adults, but is increasingly seen in children, adolescents and younger adults due to rising levels of obesity, physical inactivity and poor diet. The key to controlling Type II diabetes is leading a healthy lifestyle, which includes eating a balanced diet, exercising frequently, quitting smoking, and keeping a healthy weight.[3] Curry leaf herbal preparations are used in many medicinal systems,

including Ayurveda, Siddha therapy, Unani therapy, and Traditional Chinese Medicine, to treat a variety of conditions, including diabetes, diarrhea, stomach infections, and more. Curry leaf extract is frequently used to treat diabetes because of its anti-diabetic qualities. In addition to having anthelmintic, antifungal, and antibacterial qualities, cosmetics prepared from dry, ground leaves are also useful against a variety of illnesses, including skin conditions.[4]

Curry leaves are thought to have numerous therapeutic benefits in Ayurvedic medicine, including the ability to prevent diabetes, fight cancer, reduce inflammation, and protect the liver. Eating curry leaves on a regular basis helps manage diabetes. Curry leaves are abundant in flavonoids, one type of antioxidant. Because flavonoids stop the body from converting starch to glucose, they aid in blood sugar regulation.[5] Curry leaves assist manage diabetes because they have hypoglycemic effects by boosting the body's synthesis of insulin. Curry leaves' high fibre content slows down the conversion of carbohydrate to glucose, which helps regulate blood sugar even more. Curry leaves are also a great addition to a low-Glycemic index diet for diabetics.[6]

Dr. Vaishali Gaikwad and Suresh Ray (2018), "Effect of Curry Leaves on Blood Sugar Level in Diabetic Patients" Majority of the beneficiaries (45.7%) were between the ages of 51 and 60, with 22 (62.9%) having diabetes. Of those with diabetes, 18 (51.4%) are men, and 27 (77.1%) of those who have completed high school and secondary education do not follow a vegetarian diet. Eighty percent of patients with diabetes were from nuclear families, and twenty-eight of the twenty- eight (51.4%) individuals had had the disease for longer than three years. For the 15th and 30th days, the p values are 0.000 and 0.040, respectively. This demonstrated that the experimental group's fasting blood sugar level was lower than that of the control group. Curry leaves have an impact on blood sugar, as evidenced by the significant difference at the <0.05 level of significance.[7]

According to WHO (2014), non-communicable diseases contribute to around 38 million (68%) of all the deaths globally and to about 5.87 million (60%) of all deaths in India. About 82% of all NCD deaths are caused by four NCDs: diabetes, cancer, chronic respiratory illnesses, and cardiovascular diseases. These four NCDs are primarily responsible for the overall NCD mortality and morbidity.[8]

China is the country with the highest number of diabetics in the worldwide in 2022, with

around 141 million people suffering from the disease. It is estimated that 174 million individuals in China would develop diabetes by the year 2045.[9]

India is the country most affected by diabetes worldwide, with an estimated 77million Indians (1 in 11) officially diagnosed with the disease. This puts India second only to China. In addition, diabetes, hyperglycemia, renal failure, and other consequences of the disease claimed the lives of 700,000 Indians in 2020.India accounts for one in six (17%) of the global diabetes population. In October 2018, the population of India accounted for roughly 17.5% of the global total. The International Diabetes Federation predicts that by 2024, there will be 134 million more cases of diabetes worldwide.[10]

An Experimental study was conducted to assess Efficacy on curry leaves powder consumption on blood glucose and lipid profile among type II diabetes patients with mild elevated lipid profile in Chennai, Tamil Nadu. Sample size was 60, the sampling technique adopted for this study was purposive sampling technique. Intervention of this study was 12gm of curry leaves powder mixed with 10ml of water was given half an hour before breakfast, morning/daily in clients for 30 days, for experimental group and routine treatment was followed. Post test was conducted on the next day after completing the intervention period for both experimental andcontrol group. This study findings reveals the 't' values are as follows: 7.409 forfasting blood glucose, 8.595 for postprandial glucose, 7.811 for total cholesterol,5.432 for HDL, 3.599 for LDL, and 18.285 for triglycerides. Blood sugar levelsbefore and after the intervention were different. The mean difference was found to be significant $p<0.001$; this shows that there was a significant effect after taking of curry leaf powder in the experimental group. this study concluded that the study found that the effect of curry leaves on blood sugar level.[11]

A Pre experimental study was conducted to assess the effectiveness of curry Leaves in reducing the Blood Glucose level in Subjects with Type-2 Diabetes Mellitus clients. The Sample size was 30, the sampling technique adopted for this study was purposive sampling technique. The curry leaves provided 30 days after that conducted the post test. This study findings revealed that Pre-test mean scores are 150.66 and post-test mean scores are 112.66. Both test results are statistically significant at the 0.05 levels, with a t-value of 17.6 and df= 29. According to the study's findings, participants with type II diabetes mellitus who received curry leaves on an empty stomach for 30 days saw a reduction in their blood sugar levels when compared to their original blood sugar test results.[12]

An Experimental study was conducted to Assess the effectiveness of curry leaves on blood sugar level among diabetic clients in selected urban areas of Pune. The Sample size was 70, the sampling technique adopted for this study was purposive sampling technique. In this study, 3gm of curry leaves powder was administered to the client in experimental group for 30 days. The fasting blood glucose level was monitored on 1st, 15th, and 30th day. This study findings revealed that the majority 16 (45.7%) of the people were in the 51-60 age group. most of the 22 (62.9%) diabetic patients were male, most of the 18 (51.4%) people were secondary and higher secondary level, most of 27 (77.1%) are vegetarians, 28 (80%) come from a nuclear family and 18 (51.4%) have had diabetes for more than 3 years. When compared to the control group, the corresponding p-values for the 15th and 30th days are 0.000 and0.040, respectively, which is significant. The difference is significant at <0.05 level. Diabetics cannot control their blood sugar well before eating curry leaves, statistically prove that curry leaves are effective in reducing blood glucose level.[13]

OBJECTIVE

- To assess the pretest level of blood glucose among clients with type II DM in both control and experimental group.
- To determine the effectiveness of curry leaves powder on reducing level of blood glucose among clients with type II DM in experimental group.
- To compare the level of blood glucose among clients with type II DM in both controland experimental group.
- To find out the association between the pretest level of blood glucose level among client with type II DM with selected demographic variable and clinical variables.

Hypothesis

The hypothesis is tested at 0.05 level of significant,

H_1: There will be significant difference between the pre-test blood glucose level and post- test blood glucose level regarding the effectiveness of curry leaves powder among type II diabetic clients.

H_2: There will be a significant difference in level of blood glucose between experimental and control group.

H_3: There will be a significant association between pretest level of blood glucose and their selected demographic variables of clients with type II DM in experimental groupand control group.

Delimitation

The study is delimited to

- The sample size is limited to 60 adults.
- Data collection period is 4 weeks.

METHODS AND MATERIALS

Research approach: Quantitative research approach is chosen by investigator.

Research design: Quasi-experimental study, pre-test post-test only design.

Setting of the study: Rural areas of daman.

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 Kachigam.

Sampling technique: Non probability purposive sampling technique.

Sample size: 60

Research variables

Inclusion criteria

- Diabetic Client with blood glucose level >160 mg/dl.
- Diabetic clients who are more than 30 years
- Who are willing to participate in the study.
- Who are available during data collection time.

Exclusion criteria

- Diabetic clients who are critically ill.
- Diabetic clients with any associated disease like hypertension, respiratory disease, cardiac disease etc.

Ethical consideration

The study objectives, intervention and data collection procedure were approved by the Institutional Ethics committee of NAMO Medical Education & Research Institute & Vinoba Bhave Civil Hospital, U.T. of Dadra & Nagar Haveli and Daman & Diu**.**

Tool/ Instruments

A structure Intervention Questionnaire is developed by the investigator, based on the objectives of the study and the tool were developed after an extensive review of literature,

internet sources and opinion of the experts in the field, journals and books.

Description of the tool: The tool consists of two sections. The tool used in this study is 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 7 questions such as age, gender religion, education, family income, diet pattern, frequency of Fried and sweets, perform exercise, duration of exercise etc.

Section-B: health profile includes, duration of illness, family history of diseases, relationship with clients, Medication, type of treatment, Experience of Symptoms etc.

Organization of data

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

Section-I: Description of the demographic and clinical variables of the type II diabetic clients in experimental and control group.

Section-II: Assessment o f Pretest and post-test blood glucose level among Type II Diabetic Clients before providing curry leaves powder in experimental and control group.

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

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

Section-V: Association of pre-test blood glucose level among Type II Diabetic clients in experimental group and control group with the demographic variables and clinical variables.

Section I: Description of the Demographic and Clinical variables of the type II diabetic clients in experimental and control group.

Table 1: Frequency and percentage distribution of demographic variables of type II diabetic clients. n=60

Sr. No.	Demographic Variables	Experiment Group (30)		Control Group (30)	
		Frequency (f)	Percentage(%)	Frequency (f)	Percentage (%)
1	**Age**				
	30-39 years	4	13.33	3	10.00
	40- 49 years	11	36.67	9	30.00
	50- 59 years	11	36.67	11	36.67
	>60 Above	4	13.33	7	23.33
2	**Gender**				

	Male	17	56.67	14	46.67
	Female	13	43.33	16	53.33
	Transgender	0	0.00	0	0.00
3	**Religion**				
	Hindu	29	96.67	25	83.33
	Muslim	1	3.33	5	16.67
	Christian	0	0.00	0	0.00
	Others	0	0.00	0	0.00
4	**Education Status**				
	Illiterate	6	20.00	3	10.00
	Primary	8	26.67	5	16.67
	Secondary	9	30.00	7	23.33
	Higher secondary	5	16.67	10	33.33
	Graduate	2	6.67	5	16.67
	Post graduate and above	0	0.00	0	0.00
5	**Monthly income (In Rupees)**				
	<5000	3	10.00	2	6.67
	5000 – 10000	17	56.67	18	60.00
	11000 – 15000	9	30.00	10	33.33
	16000- 25000	1	3.33	0	0.00
	>25000	0	0.00	0	0.00
6	**Dietary Pattern**				
	Vegetarian	8	26.67	9	30.00
	Non-vegetarian	0	0.00	0	0.00
	Mixed	22	73.33	21	70.00
7	**If Vegetarian, how**				
	often will you take fried items andsweet?				
	Daily	0	0.00	1	3.33
	Weekly once	4	13.33	2	6.67
	Weekly twice	7	23.33	7	23.33
	Monthly twice	6	20.00	9	30.00
	Rare	13	40.00	11	36.67
8	**Do you Perform exercise**				
	Yes	4	13.33	3	10.00
	No	26	86.66	27	90.00
	If yes, How Oftenwill you perform exercise				
9	No	26	86.66	27	90.00
	Daily	4	13.33	3	10.00
	Weekly	0	0.00	0	0.00
	Monthly	0	0.00	0	0.00
	Occasionally	0	0.00	0	0.00
10	**Duration of Exercise**				
	No	26	86.66	27	90.00
	15 minutes	1	3.33	1	3.33

	30 minutes	3	10.00	2	6.67
	45 minutes	0	0.00	0	0.00

Table 2: Frequency and percentage distribution of Clinical variables of type II Diabetic client. n=60

Sr. No.	Demographic variables	Experimental Group (30)		Control Group (30)	
		Frequency (f)	Percentage (%)	Frequency (f)	Percentage (%)
1	**Age of onset of diabetes mellitus**				
	30-35 years	3	10.00	4	13.33
	36- 40 years	13	40.00	19	63.33
	41- 45 years	8	26.67	6	20.00
	46- 50 years	5	16.67	1	3.33
	51- 55 years	1	3.33	0	0
	56- 60 years	0	0.00	0	0.00
	>60 yeas	0	0.00	0	0.00
2	**Duration of diabetes mellitus**				
	< 1 year	0	0.00	0	0.00
	2-3 year	9	30.00	3	10.00
	4-5 year	7	23.33	4	13.33
	>5 year	14	46.67	23	76.67
3	**Is there any family history**				
	Yes	17	56.67	19	63.33
	No	13	40.00	11	36.67
4	**If yes, Mention the relationship**				
	Grandfather	3	10.00	4	13.33
	Grandmother	1	3.33	2	6.67
	Father	7	23.33	6	20.00
	Mother	5	16.67	5	16.67
	Sibling	1	3.33	2	6.67
	Other	0	0.00	0	0.00
5	**Are you on regular treatment**				
	Yes	30	100.00	30	100.00
	No	0	0.00	0	0.00
6	**Name of medicine for diabetes mellitus**				
	Metformin	11	36.67	12	40.00
	Glimepiride	1	3.33	1	3.33
	Glipizide &combination	18	60.00	17	56.67
	Any other	0	0.00	0	0.00
7	**Type of treatment**				
	Ayurvedic	0	0.00	0	0.00
	Allopathic	30	100.00	30	100.00

	Homeopathic	0	0.00	0	0.00
	Any other	0	0.00	0	0.00
8	**Have youExperienced any Followingsymptoms**				
	Giddiness	2	6.67	6	20.00
	Palpitation	8	26.67	7	23.33
	Profuse Sweating	20	66.67	16	53.33
	Any other	0	0.00	1	3.33

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

Table 3: Frequency and Percentage distribution of pre-test level of reducing blood glucose level among type II diabetic clients in selected rural area of daman. n=60

Pre-test				
	Experimental Group		**Control Group**	
	Frequency	**Percent (%)**	**Frequency**	**Percent (%)**
1. Excellent control (151-175)	2	6.7	7	23.3
2. Good control(176-200)	11	36.7	9	30
3. Average control (201-225)	12	40	12	40
4. Poor control(226-250)	5	16.7	2	6.7
Total	30	100	30	100

According to the pre-test level of reducing blood glucose level among type II diabetic clients reveals that,

In experimental group, the pre-test level of reducing blood glucose level among type II diabetic clients. Among the sample, Highest to 12 (40.0%) had average blood glucose level, followed by 11 (36.7%) had good level of blood glucose level, 5 (16.7%) had poor blood glucose level and least 2 (6.7%) had excellent blood glucose level.

In Control group, the pre-test level of reducing blood glucose level among type II diabetic clients. Among the sample, Highest to 12 (40.0%) had average blood glucose level, followed by 9 (30.0%) had good level of blood glucose level, 2 (6.7%) had poorblood glucose level and least 7 (23.3%) had excellent blood glucose level.

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

Table 4: Compare the Pretest and post-test blood glucose level among Type II Diabetic clients after providing curry leaves powder in experimental and control group. n=60

Group		Mean	Mean difference	Mean percentage	Mean percentage gain	SD	SED
Experimental	Pre-Test	204.56	10.9	81.82%	4.36%	22.483	4.10
	Post-Test	193.66		77.46%		28.395	5.18
Control	Pre-Test	197.93	0.3	79.17%	0.12%	21.151	3.86
	Post- Test	198.233		79.29%		20.724	3.78

* NS: Non-significant

** Significant---p≤ 0.05

*** Highly Significant--p≤ 0.001

**** Very Highly Significant--p≤0.0001

In experimental group, the pretest mean score was 204.66 and standard deviation was 22.483 were has the posttest mean score was 193.66 and standard deviation was 28.395. The mean difference was 10.9, mean percentage was 81.82% in pretest and 77.46% in posttest, mean percentage gain was 4.36% the mean score was decreased after intervention of curry leaves powder. This shows that there is significant difference between the mean score after intervention.

In control group, the pretest mean score was 197.93 and standard deviation was 21.151 were has posttest mean score was 198.23 and standard deviation was 20.724. the mean difference was 0.3, mean percentage was 79.17% in pretest and 79.29% in posttest, mean percentage gain was 0.12% the mean score was increased in control group. Hence, the H_2 accepted.

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

Table 5: Effectiveness of the curry leaves powder in reducing blood sugar level in experimental group. n=60

Group		Mean score	Mean Difference	SD	Calculatedt value	Table value	df	Inference
Experimental group	Pretest	204.56	10.9	18.24	3.272	1.699	29	S
	Post	193.66						

	test							
Controlgroup	Pretest	197.93	0.3	1.803	0.911	1.699	29	NS
	Post test	198.23						

In above table that t value of control group 0.911 and table value 1.699 which was not significant at the level of 0.05 beside the 't' value of experimental group 3.272 which was greater than table value 1.699 that indicated there is a significant difference between pretest and posttest blood glucose level regarding the effectiveness of curry leaves powder among type II diabetic clients. Hence the H1 accepted.

Section V: Association of pre-test blood glucose level among Type II Diabetic clients in experimental group with the demographic variables and clinical variables.

Table 6: Association Between Pre-test level of blood glucose reduction in experimental group with demographic variables. n=30

Sr. No.	Demographic Variables	Reduction of blood glucose level				Calculated value and df	Table value	Inference
		151-175	176-200	201-225	226-250			
		Frequency (f)	Frequency (f)	Frequency (f)	Frequency (f)			
1	Age (InYear)					8.457 df=9	2.26	S
	30-39 years	0	1	1	2			
	40-49 years	0	4	6	1			
	50-59 years	2	4	4	1			
	>60 years	0	2	1	1			
2	**Gender**					0.494 df=2	4.30	NS
	Male	1	7	6	3			
	Female	1	4	6	2			
	Transgender	0	0	0	0			
3	**Religion**					5.172 df=3	3.18	S
	Hindu	2	11	12	4			
	Muslim	0	0	0	1			
	Cristian	0	0	0	0			
4	**Educational Status**					7.111 df=12	2.18	S
	Illiterate	0	2	3	1			
	Primary	0	3	4	1			
	Secondary	1	4	2	2			
	Higher Secondary	1	2	2	0			
	Graduate	0	0	1	1			
5	**Monthly Income (In Rupees)**					9.396 df=9	2.26	S

	<5000	0	2	0	1			
	5000-10000	0	3	3	3			
	11000-15000	0	1	0	0			
	16000-25000	2	5	9	1			
6	**Dietary Pattern**					1.116 df=3	3.18	NS
	Vegetarian	0	3	4	1			
	Non- vegetarian	0	0	0	0			
	Mixed	2	8	8	4			
7	**If, vegetaria n, howoften will you take fried and sweets items?**					19.407 df=12	2.18	S
	Daily	0	0	1	0			
	Weeklyonce	1	2	0	1			
	Weeklytwice	0	5	0	2			
	Monthlytwice	0	0	4	2			
	Rare	1	4	7	0			
8	**Do youperform exercise?**					1.44 df=4	2.78	NS
	Yes	2	1	1	0			
	No	8	9	4	5			
9	**How often Will you perform Exercise**					1.44 df=9	2.26	NS
	No	8	9	4	5			
	Daily	2	1	1	0			
	Weekly	0	0	0	0			
	Occasionally	0	0	0	0			
10	**Duration of Exercise**					7.19 df=9	2.26	S
	No	8	9	4	5			
	15 Minute	0	0	1	0			
	30 Minute	2	1	0	0			
	45 Minute	0	0	0	0			

* NS- non-significant

** Significant---p≤ 0.05

*** Highly Significant--p≤ 0.001

**** Very Highly Significant--p≤0.0001

In above table indicates that, A significant association between Pretest level of reducing the

blood glucose level among the Type II diabetic clients as the calculated value 19.407. The Demographic variables gender, dietary pattern, Exercise, Frequency of Exercise has no significant association with the reducing blood glucose level as the calculated value were less.

Table 7 : Association between pre-test level of blood glucose reduction inexperimental group with clinical variables. n=30

Sr. No.	Demographic Variables	Reduction of blood glucose level				Calculated value and df	Table value	Inference
		151-175	176-200	201-225	226-250			
		Frequency (f)	Frequency (f)	Frequency (f)	Frequency (f)			
1	**Age of onset of diabetes Mellitus**					14.476 df=12	2.18	**S**
	30-35 years	0	1	2	0			
	36-40 years	1	7	3	2			
	41-45 years	0	1	6	1			
	46-50 years	1	2	1	1			
	51-55 years	0	0	0	1			
	56-60 years	0	0	0	0			
	>60 years	0	0	0	0			
2	**Duration of Diabetes Mellitus**					4.231 df=6	2.45	**S**
	< 1 years	0	0	0	0			
	2-3 years	0	3	4	2			
	4-5 years	0	2	3	2			
	>5 years	2	6	5	1			
3	**Is there any family history**					4.844 df=3	3.18	**S**
	Yes	0	6	9	2			
	No	2	5	3	3			
	If yes, Mention the relationship					13.284 df=15	2.13	**S**
	NA	2	5	3	3			
	Grandfather	0	2	0	1			
	Grandmother	0	0	1	0			
	Father	0	2	4	1			
	Mother	0	1	4	0			
	Sibling	0	1	0	0			
5	**Are you on regular treatment**					-	-	-
	Yes	2	11	12	5			

	No	0	0	0	0			
6	**Name of medicine for diabetes Mellitus**					3.088 df=6	2.45	**S**
	Metformin	0	4	5	2			
	Glimepiride	0	0	1	0			
	Glipizide & combination	2	7	6	3			
	Any other	0	0	0	0			
7	**Type of treatment**					-	-	-
	Ayurvedic	0	0	0	0			
	Allopathic	2	11	12	5			
	Homeopathic	0	0	0	0			
	Any other	0	0	0	0			
8	**Have you Experienced following symptoms**					5.086 df=6	2.45	**S**
	Giddiness	0	0	2	0			
	Palpitation	0	4	2	2			
	Profuse Sweating	2	7	8	3			

* NS: Non-significant

** Significant---p≤ 0.05

*** Highly Significant--p≤ 0.001

**** Very Highly Significant--p≤0.0001

In above table indicates that, A significant association between pretest level of reducing the blood glucose level among the Type II diabetic clients as the calculated value 14.476. all clinical variables have significant association.

Table 8: Association Between Pre-test level of blood glucose reduction in control group with demographic variables. n=30

Sr. No.	Demographic Variables	Reduction of blood glucose level				Calculated value and df	Table value	Inference
		151-175	176-200	201-225	226-250			
		Frequency (f)	Frequency (f)	Frequency (f)	Frequency (f)			
1	Age (InYear)					7.58 df=9	2.26	S
	30-39 years	0	2	1	0			
	40-49 years	4	2	2	1			
	50-59 years	2	2	6	1			
	>60 years	1	3	3	0			
2	**Gender**					2.608	3.30	NS

	Male	5	4	4	1	df=3		
	Female	2	5	8	1			
	Transgender	0	0	0	0			
3	**Religion**					0.629 df=3	3.18	NS
	Hindu	6	7	10	2			
	Muslim	1	2	2	0			
	Cristian	0	0	0	0			
	Educational Status					7.989 df=12	2.18	S
	Illiterate	0	1	2	0			
	Primary	1	2	1	1			
	Secondary	2	1	4	0			
	Higher Secondary	3	3	4	0			
	Graduate	1	2	1	1			
5	**Monthly Income (In Rupees)**					4.852 df=6	2.26	S
	<5000	0	0	2	0			
	5000-10000	4	5	8	1			
	11000-15000	3	4	2	1			
	16000-25000	0	0	0	0			
6	**Dietary Pattern**					10.064 df=3	3.18	S
	Vegetarian	4	2	1	2			
	Non-vegetarian	0	0	0	0			
	Mixed	3	7	11	0			
7	**If, vegetaria n, howoften will you takefried andsweets items?**					9.695 df=12	2.18	S
	Daily	0	0	1	0			
	Weeklyonce	0	2	0	0			
	Weeklytwice	3	2	2	0			
	Monthlytwice	1	3	4	1			
	Rare	3	2	5	1			
8	**Do you perform exercise?**					1.44 df=4	2.78	NS
	Yes	2	1	1	0			
	No	8	9	4	5			
9	**How oftenwill you**							
	perform							

	Exercise							
	No	8	9	4	5	1.44 df=4	2.78	NS
	Daily	2	1	1	0			
	Weekly	0	0	0	0			
	Occasionally	0	0	0	0			
10	**Durationof Exercise**					7.19 df=9	2.26	S
	No	8	9	4	5			
	15 Minute	0	0	1	0			
	30 Minute	2	1	0	0			
	45 Minute	0	0	0	0			

* NS- non-significant

** Significant---p≤ 0.05

*** Highly Significant--p≤ 0.001

**** Very Highly Significant--p≤0.0001

In above table indicates that, A significant association between Pretest level of reducing the blood glucose level among the Type II diabetic clients as the calculated value 10.064. the Demographic variables Gender, Religion, Frequency of Exercise, has no significant association with the reducing blood glucose level as the calculated value were less.

Table 9: Association between pre-test level of blood glucose reduction incontrol group with clinical variables. n=30

Sr. No	Demographic Variables	Reduction of blood glucose level				Calcul ated value and df	Table value	Inference
		151-175	176-200	201-225	226-250			
		Frequency (f)	Frequency (f)	Frequency (f)	Frequency (f)			
1	**Age of onset of diabetes Mellitus**					7.808 df=9	2.1	S
	30-35 years	1	3	0	0			
	36-40 years	4	5	8	2			
	41-45 years	2	1	3	0			
	46-50 years	0	0	1	0			
	51-55 years	0	0	0	0			
	56-60 years	0	0	0	0			
	>60 years	0	0	0	0			
2	**Duration of Diabetes Mellitus**					3.021 df=6	2.45	S
	< 1 years	0	0	0	0			
	2-3 years	0	2	1	0			
	4-5 years	1	2	0	4			
	>5 years	6	6	9	2			

3	**Is there any family history**					0.523 df=3	3.18	NS
	Yes	5	6	7	1			
	No	2	3	5	1			
4	**If yes, Mention the relationship**					14.155 df=15	2.13	S
	NA	2	3	5	1			
	Grandfather	1	2	1	0			
	Grandmother	2	0	0	0			
	Father	0	2	4	0			
	Mother	1	1	2	1			
	Sibling	1	1	0	0			
5	**Are you on regular treatment**					-	-	-
	Yes	7	9	12	2			
	No	0	0	0	0			
6	**Name of medicine for diabetes Mellitus**					3.874 df=6	2.45	S
	Metformin	3	3	5	1			
	Glimepiride	1	0	0	0			
	Glipizide & combination	3	6	7	1			
	Any other	0	0	0	0			
7	**Type of treatment**					-	-	-
	Ayurvedic	0	0	0	0			
	Allopathic	7	9	12	2			
	Homeopathic	0	0	0	0			
	Any other	0	0	0	0			
8	**Have you Experienced following symptoms**					11.870 df=9	2.26	S
	Giddiness	2	3	1	0			
	Palpitation	1	4	2	0			
	Profuse Sweating	3	2	9	2			

* NS: Non-significant

** Significant---p≤ 0.05

*** Highly Significant--p≤ 0.001

**** Very Highly Significant--p≤0.0001

In above table indicates that, A significant association between pretest level of reducing the

blood glucose level among the Type II diabetic clients as the calculated value 14.155. the clinical variables family history has no significant association with the reducing blood glucose level as the calculated value were less. Hence the H_3 accepted.

Findings of the study

The data related to age of onset of diabetes mellitus of respondents showed that maximum subjects 13 (40.0%) in experimental groups and 19 (63.33%) in control groups were belongs to the onset of age group of 36-40 years. The data related to duration of diabetes mellitus of respondents showed that maximum subjects 14 (46.67%) in experimental groups and 23 (76.67%) in control groups were having illness >5 years. The data related to family history of respondents showed that maximum subjects 17 (56.67%) in experimental groups and 19 (63.33%) in control groups had a family history of diabetes mellitus. The data related to relationship of clients of respondents showed that maximum subjects 7 (23.33%) in experimental groups and 6 (20.0%) in control groups father having type II diabetes mellitus. The data related to regular treatment of respondents showed that maximum subjects 30 (100%) in experimental groups and 30 (100%) in control groups were on regular treatment. The data related to Medication of respondents showed that maximum subjects 18 (60.0%) in experimental groups and 17 (56.67%) in control groups are taking tab. Glipizide & combination. The data related to type of treatment of respondents showed that maximum subjects 30 (100%) in experimental groups and 30 (100%) in control groups were taking Allopathic treatment. The data related to Experience of any symptoms of respondents showed that maximum subjects 20 (66.67%) in experimental groups and 16 (53.33%) in control groups are having profuse sweating.

Experimental group the pre-test level of reducing blood glucose level among type II diabetic clients. Among the sample, 12 (40.0%) had average control of blood glucose level, 11 (36.7%) had good control of level of blood glucose level, 5 (16.7%) had poor control of blood glucose level, 2 (6.7%) had excellent control of blood glucose level. Control group, the pre-test level of reducing blood glucose level among type II diabetic clients. Among the sample, 12 (40.0%) had average control of blood glucose level, 9 (30.0%) had good control of blood glucose level, 2 (6.7%) had poor control of blood glucose level, 7 (23.3%) had excellent control of blood glucose level. In experimental group post-test level of reducing blood glucose level among type II diabetic clients.14 (46.7%) had good control of blood glucose level, 8 (26.7%) had excellent control of blood glucose level, 4 (13.3%) average

control and poor control of blood glucose level. In control group, 10 (33.3%) had good control of blood glucose level, 5 (16.7%) had excellent control of blood glucose level, 12 (40.0%) average control of blood glucose level and 3 (10.0%) poor control of blood glucose level.

In experimental group: The pretest mean score was 204.66 and standard deviation was 22.483 were has the posttest mean score was 193.66 and standard deviation was 28.395. The mean difference was 10.9, mean percentage was 81.82% in pretest and 77.46% in posttest, mean percentage gain was 4.36% the mean score was decreased after intervention of curry leaves powder. This shows that there is significant difference between the mean score after intervention.

In control group, the pretest mean score was 197.93 and standard deviation was 21.151 were has posttest mean score was 198.23 and standard deviation was 20.724. the mean difference was 0.3, mean percentage was 79.17% in pretest and 79.29% in posttest, mean percentage gain was 0.12% the mean score was increased incontrol group

The t value of control group 0.911 and table value 1.699 which was not significant at the level of 0.05 beside the 't' value of experimental group 3.272 which was greater than table value 1.699 that indicated there is a significant difference between pretest and posttest blood glucose level regarding the effectiveness of curry leaves powder among type II diabetic clients. Hence the H1 accepted.

In Experimental group, A significant association between Pretest level of reducing the blood glucose level among the Type II diabetic clients as the calculated value 19.407. The Demographic variables gender, dietary pattern, Exercise, Frequency of Exercise has no significant association with the reducing blood glucose level as the calculated value were less. A significant association between pretest level of reducing the blood glucose level among the Type II diabetic clients as the calculated value 14.476. all clinical variables have significant association.

In control group, A significant association between Pretest level of reducing the blood glucose level among the Type II diabetic clients as the calculated value 10.064. the Demographic variables Gender, Religion, Frequency of Exercise, has no significant association with the reducing blood glucose level as the calculated value were less. In above

table indicates that, A significant association between pretest level of reducing the blood glucose level among the Type II diabetic clients as the calculated value 14.155. the clinical variables family history has no significant association with the reducing blood glucose level as the calculated value were less. Hence H3 accepted.

CONCLUSION

The following conclusion can be drawn from the study finding the present study was conducted to evaluate the effectiveness of curry leaves powder in reducing blood glucose among type II diabetic clients in selected rural area of daman. The finding of the study revealed that curry leaves was effective on significant reducing the blood glucose among Type II Diabetic clients. There was no significant association between the level of blood glucose reduction and the demographic variables in experimental group.

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