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## Effectiveness of curry leaves on blood sugar level among diabetic clients

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### Abstract

The total number of people with diabetes is projected to rise from 171 million in 2000 to 366 million in 2030. The objective of the study was to identify, to assess the blood sugar among diabetes client before and after administration of curry leaves in experimental; and control group and to see and assess the effect of curry leaves on blood sugar.

**Material and Methods:** Quasi-experimental non-equivalent control group design was used Sample size was 70. Non-probability purposive sampling technique was used. Diabetic clients in the age group above 40 year 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<sup>st</sup>, 15<sup>th</sup>, 30<sup>th</sup> day.

**Result:** majority 16 (45.7%) of the clients were from the age group of 51- 60 years, majority 22 (62.9%) of the diabetic clients were male, majority 18(51.4%) of the clients education were secondary and higher secondary level, majority 27(77.1%) of the diabetic clients were Non Vegetarian, majority 28(80%) of the diabetic clients were from Nuclear family and majority 18(51.4%) of the diabetic clients were having illness for more than 3years. Corresponding p-values were 0.040 and 0.000 at day 15 and day 30 respectively. This indicates that the fasting blood glucose level in experimental group decreased significantly as compared to that in control group. The difference was found statistically significant at <0.05 level, which indicates the effect of curry leaves on blood sugar level.

**Conclusion:** From the above findings, the researcher concluded that supplementation of curry leaves powder was highly helpful to control fasting blood glucose level within the period of one month without any side effects.

**Keywords:** Effect, curry leaves, blood sugar, diabetes, urban area

### Introduction

Diabetes is metabolic diseases and chronic diseases that increase blood glucose levels over a long period. If proper treatment are not provide to diabetes client suffer from complications like chronic, foot ulcers heart disease, stroke, and eyes, diabetic, Serious long-term complications [1]. Diabetes mellitus is a chronic disease caused lack production of insulin to the pancreas or unsuccessfulness of the insulin produced, That's why increase blood sugar level in the body is harm many of the body's systems like in particular the nerves blood vessels [2].

Globally, an estimated 108 million in 1980 compared to 422 million adults were living with diabetes in 2014. The global prevalence (age-standardized) of adult diabetes population increasing from 4.7% to 8.5% has nearly doubled since 1980, from this effect increase overweight [3]. All diabetes is planned to rise from diabetes client is 171 million in 2000 to 366 million in 2030. Developing countries are higher in men than women is prevalence of diabetes in urban people to between 2000 and 2030. Study found that 50.8 million diabetes in the country were suffering and Present-day estimates depict the number of diabetics in the country about 62 million increase of over 10 million from 2011 [5]. According to the data of International Diabetes Federation Atlas in India of estimated 69.2 million are diabetic clients, As per the WHO suggested that 63 million in the year 2013. The past 15 years growth are 100% in prevalence of diabetes [6]

the Indian Council of Medical Research (ICMR) has completed the phase I study related to plan in rural and urban settings and prevalence rate in Tamil Nadu 10.4 percent, Jharkhand 5.3 percent, Maharashtra 8.4 percent and Chandigarh 13.6 percent. In 1990-2010 (4,65,11,200-5,27,69,700 deaths) increase mortality rate is 13.5% and 30.0% because of Non-communicable disease from 2,65,60,300 deaths in 1990 to 3,45,39,900 in 2010 of global burden diseases Other diseases closely linked with diabetes also reported high rises; 34.9% for ischemic disease (IHD) and 26.0% for cerebrovascular disease. India is the most populous country in the world at second position by global diabetes epidemic. 50% of all diabetic clients as per the

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International Diabetes Federation lives in just three countries like India (65.1 million) China (98.4 million), and the USA (24.4 million). The International Diabetes Federation Diabetes Atlas states that in low and middle income countries, the number of people with diabetes in urban areas is 181 million, while 122 million live in rural areas. The data from the ICMR study found that prevalence of diabetes rural areas the range was 3.0 to 8.3%. in urban areas ranged was 10.9 to 14.2% [9].

Day-to-day care of diabetes client like food management, maintaining physical activity, keeping weight and tension under control, checked blood glucose levels, recording oral medications and insulin [10]. Diabetes client use complementary or alternative therapies to treat diabetes [11]. Curry leaves have a probable role in the treatment of diabetes. It is also helps to function of heart and liver. 10% curry leaves are administering a high fat diet and prevent the creation of free radicals and maintain the tissues at normal levels [12]. Curry leaves contain essential minerals, such as iron, copper, and zinc that aid in maintaining normal glucose level in the blood [13]. It was found that curry leaves have ant diabetic properties. There are various methods to control blood sugar level in diabetes client. Various researches are conducted to find out efficiency of diabetes drug as well as natural ingredients used to control blood sugar level in this study. According to WHO (World Health Organization), suggested that 80% of the populations are used curry leave plant as medicine [14]. Allopathic medicines are effective in controlling the elevation of blood sugar levels, but they also have side effects that cause discomfort complications in later states of diabetes and also the destruction of organs like the kidney, liver and heart failure etc. but ayurvedic treatment is without side effect and curry leaves plant is a high source of carbazole alkaloids.

**Objectives of this study**

1. To identify the blood sugar level among diabetic client before the administration of Curry leaves in both experiment and control group.
2. To assess the blood sugar level among diabetic client after the administration of curry leaves in experiment; and control group.
3. To compare the pre and post Intervention blood Sugar level among the diabetic Client in both the groups.
4. To evaluate the effectiveness of curry leaves on blood sugar level among the diabetic client.
5. To associate the pre intervention blood sugar level with selected demographic variables.

**Methodology**

**Research approach:** In present study quantitative research approach was adopted.

**Research design:** Quasi- experimental nonequivalent control group design.

Group	Pretest observation	Experiment	Post-test observation
Group I	O <sub>1</sub>	X	O <sub>2</sub>
Group Ii	O <sub>1</sub>	-	O <sub>2</sub>

A group pretest and post-test design was chosen for the study. This approach helped the investigator to observe the in blood sugar Level at 1<sup>st</sup> day, 15<sup>th</sup> day, and 30<sup>th</sup> day among diabetes client. The independent variable was curry leaves & dependent variable was blood sugar level. The study was

conducted in selected urban area of Pune city. Total 70 samples were selected from the selected areas of Pune city areas 35 for experiment and 35 for control group. The sampling technique used in this study was non-probability purposive sampling. Blood sugar was measured by the researcher using Glucometer on the 1<sup>st</sup> day, 15<sup>th</sup> day, 30<sup>th</sup> day, experimental group samples were given curry leaves powder.

**Result and Discussion**

**Section I: Demographic data:** Majority 22 (62.9%) of the diabetic clients were male, majority 16 (45.7%) of the clients were from the age group of 51- 60 years, majority 18(51.4%) of the clients education were secondary and higher secondary level in diabetic client, majority 14(40%) of the diabetic clients were having own business, majority 27(77.1%) of the diabetic clients were Non –Vegetarian, 28(80%) of the diabetic clients were from Nuclear family, majority 18(51.4%) of the diabetic clients were having illness for more than 3 years, majority 19(54.3%) of the diabetic clients were started with treatment since more than 3 years

**Section II: Blood sugar level among diabetic client before the administration of curry leaves in both experiment and control group-** Experimental group, average BSL was 151.9 with standard deviation of 51.39 and in control group the average BSL was 137.9 with standard deviation of 42.44.

**Section III: The blood sugar level among diabetic client after the administration of curry leaves in experiment; and control group-** Experimental group, average BSL on day 1 was 151.9 which reduced to 146.1 on day 15 which further improved to 126.9 on day 30. In control group, average BSL on day 1 was 137.9 which increased to 142 on day 15 which further increased to 151.4 on day 30.

**Section IV (A):** Effectiveness of curry leaves on blood sugar level  
n<sub>1</sub>=35, n<sub>2</sub>= 35

Day	Experimental group		df	t	p-value
	Mean	SD			
Day 1	151.9	51.4			
15th day	146.1	49.2	34	1.61	0.058
30th day	126.9	46.1	34	4.06	0.000

Comparison of pre and post interventional blood sugar level among diabetic client in experiment group. It was calculated by using paired’ test. Finding diabetes that ‘calculated value is more than ‘t’ table value and similarly p value is less than 0.05. Hence there is significant change in blood sugar level was observed.

**Section IV (B):** Comparison of pre and post Intervention blood Sugar level in control group n<sub>1</sub>=35, n<sub>2</sub>= 35

Day	Control group		df	t	p-value
	Mean	SD			
Day 1	137.9	42.4			
15th day	142.0	38.2	34	0.93	0.179
30th day	151.4	35.3	34	2.12	0.021

Comparison of pre and post interventional blood sugar level among diabetic client in control group. It was calculate by using paired’ test. finding diabetes that ‘calculated value is less than ‘t’ table value and similarly p value is less than 0.05. Hence there is no significant change in blood sugar level was observed.

**Section V:** Comparison of Post Intervention blood Sugar level in experimental and control group  $n_1=35$ ,  $n_2= 35$

Day	Experimental group		Control group		z	p-value
	Mean	SD	Mean	SD		
15th day	5.9	21.5	-4.1	25.9	1.7	0.040
30th day	25.0	36.4	-13.5	37.7	4.3	0.000

Paired t-test for comparison of BSL change on day 15 and day 30 with respect to the BSL level on day 1. In control group, average BSL change on day 15 was -4.1 which further decreased to -13.5 on day 30. In experimental group, average BSL change on day 15 was 25.9 which further increased to 37.7 on day 30. Z-values for this comparison were 1.7 and 4.3 on day 15 and day 30 with 68 degrees of freedom. Corresponding p-values were 0.040 and 0.000 at day 15 and day 30 respectively. This indicates that the BSL in experimental group decreased significantly as compared to that in control group

**Section VI: ANOVA for association of the pre intervention blood sugar level with selected demographic variable**

None of the demographic variable was found to have association with Blood Sugar Level of diabetic client. P values are large (greater than 0.05). The result of the statistical test shows that the administration of Curry leaves was effective in reducing BSL level significantly. However there is no association of demographic variables with BSL of diabetic client.

**Discussion**

**Discussions of the Findings**

Several studies support that like Sucheta L, *et al*; has conducted study on "Hypoglycemic effect of curry leave In Type 2 Diabetes Mellitus". Researcher has taken 20 male clients. Diabetic clients in the age group of 51-62 years. 15 g of curry leaf powder was supplemented for a period of 30 days. The Fasting and Post Prandial Blood Glucose levels were recorded for both control and experimental before supplementation. Checked Blood glucose level before lunch and after lunch was recorded on 0, 1, 10, 20 and 30 Day of the administration period. The Result found the hypoglycemic properties of curry leaf powder in controlling the fasting and post prandial blood glucose level among the diabetics. The blood glucose which elevates post lunch was found to significantly reduced, when food was consumed along with curry leaf powder.<sup>38</sup>A study conducted by Joseph Ranjith, *et al*; on effect of curry leaves in the control of blood sugar among diabetic clients. Researcher has taken 43 Diabetic client and curry leaves powder 2.5gm morning and night daily was administered to the experiment group. There was a consistent decrease in mean blood sugar level from day 1(249.045) to day 15 (219.95) to day 30 (197.05) in the experimental group. Whereas in control group the mean blood sugar remained almost same level on day 1(214.68), day 15(213.86) and day 30(210)

**Conclusion**

Researcher thinks that these finding ayurvedic was considered as alternative therapy states for controlling Blood sugar level in Diabetes Mellitus. Client also demand for herbal products. Curry leaves is used easily available in market, easy to consume, cost is less, not harmful. For that benefit purpose people are more interested to take ayurvedic treatment as compared to allopathic treatment. Diabetic client was given

more support in this study. Some Diabetic clients also have heard related curry leaves effect of blood sugar level.

So the present study was undertaken by the Researcher with the main purpose to evaluate the effect curry leaves on Blood sugar level in Diabetes mellitus. In this study researcher has controlled blood sugar level by using curry leaves powder. Maintain client good health and prevention of complication. Researcher started study with assumption of curry leaves having some effect on blood sugar level among the diabetes. Resercher has got information in journal and ayurvedic books. Researcher has wanted to find home remediate effect of curry leaves on diabetes.

Curry leaves are effective in reducing blood sugar level if taken regularly along with other medication. Curry leaves is used easily available in market, easy to consume, cost is less, not harmful. For that benefit purpose people are more interested to take ayurvedic treatment as compared to allopathic treatment. The present study aimed in controlling blood sugar level among diabetes client. The conclusion drawn from findings of the study were as follows:-

- Majority of the diabetic clients were not maintaining properly blood sugar level before administration curry leaves
- statistically proved that clients after consumption the curry leaves showed control blood sugar level and benefits of curry leaves in daily life without any side effect.
- The researcher is optimistic that the study has exposed some directions for further research that will influence a greater appreciation and awareness related curry leaves.

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