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A true experimental study to evaluate the effectiveness of curry leaves Powder on level of blood glucose among clients with type II diabetes mellitus at selected community area, in Pudukkottai

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Abstract

Diabetes Mellitus (DM) or simply diabetes is a group of metabolic diseases in which a person has high blood sugar. Diabetes is due to either the pancreas not producing enough insulin, or because the cells of the body do not respond properly to the insulin that is being produced. Curry leaves have been seen to stop the production of digestive enzyme and pancreatic alpha-amylase enzyme which helps in sugar or glucose not being released into the blood. Insulin is the enzyme secreted by pancreas to regulate blood sugar levels. By reducing the availability of the pancreatic alpha- amylase enzyme, the leaves are able to inhibit the conversion of starches to sugar which can help to treat diabetes effectively. Total 60 samples were selected for the study and probability – simple random technique is used to allocate the study subject in true experimental pre test and post test control group design. The intervention for the study was curry leaves powder (15 gms) The pre-test fasting blood glucose level was checked in control group and experimental group. The level of fasting blood glucose was assessed by glucometer. After the pre-test, curry leaves powder (15 gms) was given to the experimental group clients with type II diabetes mellitus. The post test level of fasting blood glucose was assessed in both experimental and control group by using the same glucometer after 30 days. The result of the study revealed that the post test mean score in the experimental group was 129.4 with S.D 9.23 and the post test mean score in the control group was 146.1 with S.D 12.5. The calculated unpaired ‘t’ value 5.88 was found to be statistically significant at $p < 0.05$ level.

Keywords: Curry leaves, Diabetes Mellitus (DM), insulin

Introduction

"A world free diabetes is not our dream it is our pledge"

-Charlie Kimbal

Diabetes is a wasting disorder spreading at unstoppable speed in all parts of the world, becoming a serious threat and is a leading cause of cardiovascular disease and mortality. It is a global epidemic and major health challenge of the 21st century. Worldwide, around 382 million people in the age group of 40 to 59 years had diabetes in 2013; by 2030 this will rise to 550 million [10% of the world population] and expected to reach around 592 million by 2035. Every six seconds a person dies due to diabetes. Diabetes has caused 5.1 million deaths in 2013. By 2035 Type II diabetes in particular will increase by 55% International Diabetes Federation 2013 (IDF).

Diabetes mellitus is a complex, chronic illness requiring continuous medical care with multi factorial risk reduction strategies beyond glycaemic control [The American Diabetes Association 2014]. Poorly controlled diabetes can cause devastating, irreversible complications such as visual impairment and blindness, kidney failure, heart attack, stroke, lower extremities amputation and erectile dysfunction Type II diabetes has created 2 to 5 times higher risk of coronary heart disease and the prognosis is poor. In India, 40 million people suffer from diabetes, and this figure is likely to go up to 80 million by 2025, making it the 'Diabetes Capital of the world. Diabetes Foundation India (DFI) has been working in the area of diabetes management since 1987.

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Its main objective is to conduct research in regard to the problem of diabetes in the country that may include epidemiology. Clinical profile of therapeutics including indigenous drugs and yoga etc.

Diabetes Mellitus a heterogeneous metabolic disorder is characterized by hyperglycemias due to defective insulin secretion, resistance to insulin action or both. Management of diabetes without any side effect is still a challenge to the medical community, Medicinal plants provide the useful source of hypoglycaemic compounds for the development of pharmaceutical entities or as a dietary adjunct to existing therapies. *Murraya koenigi* (Curry leaves) is one such medicinal plant which is being explored for its hypoglycaemic property.

Perhaps one of the biggest health benefits of curry leaves is its use in diabetes control. Research conducted by the Department of Biochemistry and Molecular Biology at University of Madras, Chennai had shown that the anti hyperglycaemic properties of curry leaves were beneficial in controlling blood glucose levels in diabetic rats.

Objectives

1. To assess the pre-test level of blood glucose among clients with type II diabetes Mellitus in the experimental and control group
2. To assess the post test level of blood glucose among clients with type II diabetes Mellitus in the experimental and control group
3. To evaluate the effectiveness of curry leaves powder among clients with type II Diabetes mellitus in the experimental group.
4. To associate the level of blood glucose among clients with type II diabetes Mellitus in experimental group with their selected demographic variables.

Methodology

A true experimental study design was adopted the study was among client who diagnosed as type II diabetes mellitus between the age of 45 to 65 years in selected area. The sample was calculated based on the pilot study findings. Total 60 samples in that 30 were in control group and 30 were in experimental group who fulfilled the inclusion criteria were screened and recruited for the study using a probability simple random technique. The study was approved by the research and ethics committee of the institution. Written informed consent was obtained from the client who fulfilled the inclusion criteria. Pre-test fasting blood glucose level was taken among clients with type II diabetes mellitus in experimental and control group. After the pre test 15 gms of curry leaves powder was given for 30 days the experimental group clients. Post test fasting blood glucose level was taken among clients with type II diabetes mellitus. The level of blood glucose was measured and categorised as per the grading.

Data collection

The total sample of 60 type II diabetes mellitus client who met the inclusion criteria was selected by probability simple random sampling technique, among them 30 were in experimental group and 30 were in control group in selected areas respectively. The period of data collection was for 30 days. The data was collected on all seven days of the week. The timing of data collection was day timing. On selection

of the study subject, self introduction was given. Written consent was obtained. Pre-test fasting blood glucose level was taken among clients with type II diabetes mellitus in experimental and control group. After the pre test 15 gms of curry leaves powder was given for 30 days the experimental group clients. Post test fasting blood glucose level was taken among clients with type II diabetes mellitus. The level of blood glucose was measured and categorised as per the grading.

Result and Discussion

This chapter discussed the major findings of the study and reviews them in areas of result from other studies. Data analysis was carried out. Frequency and percentage distribution of was done and it was planned and arranged under the following headings. In the experimental group, majority 17(56.7%) were in the age group of 51 – 60 yrs, 17(56.66%) were male, almost all 30(100%) were married, 27(90%) were Hindus, 13(43.3) had no formal education, 12(40%) occupation was home maker, 14(46.7%) had monthly income of Rs.10001 – 15000, 21(70%) were suffering from illness for 2 – 5 yrs, 20(66.7%) had no family history of diabetes mellitus, 16(53.3%) were not following regular diabetic diet and 17(56.7%) were not following regular exercise.

In the control group, majority 20(66.7%) were in the age group of 51 – 60 yrs, 19.(63.3%) were female, almost all 30(1000%) were married, 24(84%) were Hindus, 10(33.3%) were no formal education and graduates, 15(50%) were home maker, 13(43.3%) had monthly income of Rs.10001 – 15000, 18(60%) were suffering from illness for less than 2 years, 25(83.3%) had no family of diabetes mellitus, 17(56.%) were not following regular diabetic diet and 26(86.7%) were not following exercise.

The pre and post test level of fasting blood glucose among client with type II diabetes mellitus in experimental group. The pre test mean value of fasting blood glucose was 148.4 with S.D 11.14 and the post test mean value of fast blood glucose were 129.4 with S.D 9.23. The calculated paired 't' value 16.09 was found to be statistically significant at $p < 0.05$ level.

The pre and post test level of fasting blood glucose among client with type II diabetes mellitus in control group. The pre test mean value of fasting blood glucose was 145.8 with S.D 12.74 and the post test mean value of fast blood glucose were 146.1 with S.D 12.5. The calculated paired 't' value 0.23 was not found to be statistically significant.

Comparing the post test fasting blood glucose score between the experimental and control group, the post test score in the experimental group was 129.4 with S.D 9.23 and in control group was 146.1 with S.D 12.5. the calculated unpaired 't' value 5.88 was found to be statistically significant at $p < 0.05$ level.

The chi square value showed significance association between the curry leaves powder to type II diabetes mellitus. The demographic variable such as duration of illness had shown statistically significance association with the post test level of fasting blood glucose among type II diabetes mellitus at $p < 0.05$ level. The other demographic variables had not shown statistically significance association with the post test level of fasting blood glucose among type II diabetes mellitus in the experimental group.

Table 1: Frequency and percentage distribution of pre test and post test level of fasting blood glucose among client with type II diabetes mellitus in the experimental group

Fasting blood glucose	Marked changes in level of blood glucose (115 – 130 mg/dl)		Moderate changes in level of blood glucose (131 – 146 mg/dl)		Mild changes in level of blood glucose (147 – 162 mg/dl)	
	No	%	No	%	No	%
Pre test	5	16.7	5	16.7	20	66.6
Post test	19	63.3	9	30	2	6.7

Table 2: Frequency and percentage distribution of pre test and post test level of fasting blood glucose among client with type II diabetes mellitus in the control group

Fasting blood glucose	Marked changes in level of blood glucose (115 – 130 mg/dl)		Moderate changes in level of blood glucose (131 – 146 mg/dl)		Mild changes in level of blood glucose (147 – 162 mg/dl)	
	No	%	No	%	No	%
Pre test	7	24.1	5	16.7	18	60
Post test	7	24.1	5	10	20	66.7

Table 3: Comparison of pre test and post test level of fasting blood glucose among client with type II diabetes mellitus in the experimental group

Fasting blood glucose	Mean	SD	't' value
Pre test	148.4	11.14	16.09*
Post test	129.4	9.23	

Delimitation

The study is limited to

1. Sixty samples
2. Clients with type II diabetes mellitus between 45-65 years of age.
3. Clients who are on oral hypoglycaemic drugs.

Conclusion

The findings of the present study support that, curry leaves is very safe, cost effective and almost is safe to health of type II diabetes mellitus client. It is provided to be an effective in non pharmacological management to reduce the blood glucose level.

Recommendation

1. A longitudinal study could be conducted to assess the effectiveness of curry leaves in maintaining blood glucose level.
2. This study could be done in multiple settings.
3. The effectiveness of curry leaves could be tested among client with diabetes mellitus who are on insulin administration.

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