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## An experimental study to assess the effectiveness of lady's finger juice among adults with type 2 diabetes mellitus in Kundrathur

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### Abstract

The primary aim of managing diabetes is to maintain blood glucose level to prevent induced complications. Studies showed that Ladies finger juice are blood sugar stabilizer. The objective of this randomized controlled trial was to assess the effect of ladies finger juice on blood glucose level among adults with type2 diabetes mellitus clients. A quantitative approach with experimental design was adopted for the present study. Total of 70 type 2 diabetes mellitus patient among one group 35 sample is experimental group and other 35 sample is control group. Pretest and posttest intervention fasting blood sugar (FBS) was assessed by glucometer. An experimental group received 2mg/day of ladies finger juice for 21 days. A self - structured questionnaire method was used to collect both the

demographic data and knowledge about the type 2 diabetes mellitus. Analysis was done based on a quantitative approach with quasi experimental research design was adopted for the present study. In sample size was 70 type2 diabetes mellitus. after intervention the experimental group value of post test 't' test value is  $t = 5.092$  was found to be statistically significant at  $p < 0.001$ . It was observed there was significant improvement in the post level of blood glucose in the experimental group which clearly infers that ladies finger juice on blood glucose level was found to be effective in reducing the level of blood glucose among adults with type2 diabetes mellitus in the experimental group than the control group.

**Keywords:** Ladies finger juice, Type 2 diabetes mellitus, Adults

### Introduction

All cells in the body want energy to work commonly. aldohexose is the most supply of energy for the body's cells and is carried to every cell through the blood. The endocrine hypoglycemic agent permits the aldohexose to get into the cells. Polygenic disorder is caused by a downside in the approach the body makes or uses hypoglycemic agent. Hypoglycemic agent is required to maneuver blood sugar (glucose) into cells, wherever it is hold on and later used for energy. Polygenic disorder mellitus is presently changing into a common Non-communicable diseases downside, that includes a vary of chronic conditions, together with cancer, diabetes, disorder, cardiovascular disease, as well as Alzheimer's and alternative dementias.

Type 2 diabetes is generally a chronic disease associated with a ten-year-shorter life expectancy. This is partially because of a variety of complications with that it's associated, including: 2 to fourfold the risk of disorder, together with anemia heart illness and stroke; a 20-fold increase in lower limb amputations, and enlarged rates of hospitalizations. In the developed world, and progressively elsewhere, kind two polygenic disorder is the largest cause of non-traumatic sightlessness and urinary organ failure. It's conjointly been associated with associate enlarged risk of psychological feature disfunction and insanity through illness processes such as and vascular dementia.

The pre stage of kind two diabetes will be known by associate impaired aldohexose tolerance associated/or by an impaired fast glucose. To effectively manage glycosylated hemoprotein and glucose levels, it's necessary to grasp however to balance food intake, physical activity, and medicine. With regular exercise and diet modification programs, several folks with kind two polygenic disorder will minimize or maybe avoid medications.

Apart from weight loss and increase in physical activity, the event of kind two diabetes will even be prevented by dietary changes. a coffee - fat diet with a dietary fibre intake of over 30g/d was shown to represent an efficient preventive approach. A high-fibre diet has several positive effects on the physical health standing.

Additionally to positive effects within the GI tract it has associate obvious potential to support weight reduction and to boost disturbances of supermolecule and fat metabolism. At this state of data, insoluble dietary fibres as found in whole grain cereal merchandise ar thought of to be particularly effective in the interference of kind two polygenic disorder mellitus. A high intake of fruits and vegetables as well as pulses conjointly exerts health-promoting properties. A diabetic diet that promotes weight loss is necessary. A low glycemic index diet has been found to improve blood sugar management.

Mode changes of diet and exercise ar very necessary for folks WHO have polygenic disorder, or WHO ar at high risk of developing complications because of kind two polygenic disorder. Mode interventions will be terribly effective in preventing or suspending the progression of polygenic disorder. These interventions ar particularly necessary for overweight folks. Avoirdupois is common in patients with kind two polygenic disorder, and this condition seems to be associated with hypoglycemic agent resistance. The first dietary goal for overweight kind two patients is weight loss and maintenance. Aerobic exercise ends up in a decrease in glycosylated hemoprotein and improved hypoglycemic agent sensitivity. Resistance coaching is additionally helpful and also the combination of each sorts of exercise might be most effective.

### Methods and Material

The quantitative approach with quasi experimental research design was used in this study. The population of the study included a all adults who were lived in kundrathur, chennai. The under study patients were diagnosed with type 2 diabetes

mellitus by and clinical check up with FBS using a glucometer and met criteria of the study. These criteria included diabetic clients who were in the age group of adults client with FBS more than 126mg/dl; excluded are type 2 DM clients who had any other co morbidities like hypertension, cardio vascular diseases, etc, who were on insulin treatment, gestational DM, clients on anticoagulation and antihypertensives. After attending the orientation session and fulfilling written informed consent paper, the participants are enrolled. The samples size is 70; 35 for experimental group; another 35 is for control group in this study. Experimental group On the 3<sup>rd</sup> day morning the experimental group samples were asked to consume the ladies finger juice before breakfast for 21 days. Every day morning, the experimental group drank the ladies finger juice in empty stomach under the supervision of the investigator. During the day time the investigator collected demographic data and level of knowledge on diabetes mellitus by using structured knowledge interview questionnaire. It took taken 40 minutes per day for each sample. The pretest fasting blood glucose level was checked on 4<sup>th</sup> and 8<sup>th</sup> day for both experimental and control group. All clients were permitted to consume their usual medications according to their physicians.

### Results

Out of 70 study participants, only 35 were included for analysis, 35 study participants were intervention and experimental group. Participants were analysed and found difference with final participant characteristics. Table 1 describe the baseline characteristics of participants among adults with type 2 diabetes mellitus.

**Table 1:** Frequency and percentage distribution of demographic variables of adults with type 2 diabetes mellitus N = 70(35+35)

Demographic Variables	Experimental Group		Control Group	
	No.	%	No.	%
<b>Age</b>				
40-45 years	7	20.0	7	20.0
46-50 years	4	11.4	2	5.7
51-55 years	8	22.9	6	17.1
56-60 years	16	45.7	20	57.1
<b>Sex</b>				
Male	18	51.4	14	40.0
Female	17	48.6	21	60.0
<b>Religion</b>				
Hindu	22	62.9	19	54.3
Christian	6	17.1	10	28.6
Muslim	7	20.0	6	17.1
<b>Education</b>				
No formal education	15	42.9	18	51.4
Primary school	4	11.4	12	34.3
High school	8	22.9	2	5.7
Higher secondary school	7	20.0	3	8.6
Graduate	1	2.9	0	0
<b>Occupation</b>				
Coolie	23	65.7	19	54.3
Government employed	0	0	2	5.7
Private employee	3	8.6	6	17.1
Unemployed	9	25.7	8	22.9
<b>Family monthly income</b>				
Rs.5000 – 6000	4	11.4	7	20.0
Rs.6000 – 70000	9	25.7	11	31.4
Rs.7000 – 8000	15	42.9	9	25.7
Above Rs.8000	7	20.0	8	22.9
<b>Type of family</b>				

Joint family	14	40.0	17	48.6
Nuclear family	21	60.0	18	51.4
<b>Marital status</b>				
Married	19	54.3	9	25.7
Unmarried	11	31.4	18	51.4
Divorce	5	14.3	8	22.9
<b>Dietary plan</b>				
Vegetarian	11	31.4	7	20.0
Non-vegetarian	24	68.6	28	80.0
<b>Practice of exercise</b>				
Regular	-	-	5	14.3
Irregular	14	40.0	3	8.6
Not going	21	60.0	27	77.1
<b>Family history of diabetes mellitus</b>				
Father	1	2.9	0	0
Mother	-	-	-	-
Paternal grandparent	12	34.3	0	0
Maternal grandparent	5	14.3	35	100.0
Not applicable	17	48.6	0	0
<b>Source of health information</b>				
Television	2	5.7	4	11.4
Radio	-	-	-	-
Newspaper	10	28.6	7	20.0
Health workers	23	65.7	24	68.6

The table 1 shows that most of the adults with type 2 diabetes mellitus in the experimental group, 16(45.7%) were in the age group of 56 – 60 years, 18(51.4%) were male, 22(62.9%) were Hindus, 15(42.9%) had no formal education, 23(65.7%) were coolies, 15(42.9%) had a family monthly income of Rs.7000 – 8000, 21(60%) belonged to nuclear family, 19(54.3%) were married, 24(68.6%) were non-vegetarian, 21(60%) were not practicing exercise, 17(48.6%) had no family history of diabetes mellitus and 23(65.7%) received health information through health workers.

The table 1 also shows that most of the adults with type 2

diabetes mellitus in the control group, 20(57.1%) were in the age group of 56 – 60 years, 21(60%) were female, 19(54.3%) were Hindus, 18(51.4%) had no formal education, 19(54.3%) were coolies, 11(31.4%) had a family monthly income of Rs.6000-7000, 18(51.4%) belonged to nuclear family, 18(51.4%) were unmarried, 28(80%) were non-vegetarian, 27(77.1%) were not practicing exercise, 35(100%) had family history of diabetes mellitus by maternal grandparent and 24(68.6%) received health information through health workers.

**A study to assess the pretest and post-test level of blood glucose among adults with type 2 diabetes mellitus in experimental and control group**

**Table 2:** Frequency and percentage distribution of level of blood glucose among adults with type 2 diabetes mellitus in experimental group (n = 35)

Blood Glucose Level	Normal (70-100 mg/dl)		Controlled diabetes mellitus (101-126 mg/dl)		Uncontrolled Diabetes Mellitus (above 126 mg/dl)	
	No.	%	No.	%	No.	%
Pretest	0	0	0	0	35	100.0
Post Test	0	0	7	20.0	28	80.0

The above table 2 shows that in the pretest, all 35(100%) had uncontrolled diabetes mellitus above 126 mg/dl.

Whereas in the post test, 28(80%) had uncontrolled diabetes

mellitus above 126 mg/dl and 7(20%) had controlled diabetes mellitus among type 2 diabetes mellitus in the experimental group.

**Table 3:** Frequency and percentage distribution of level of blood glucose among adults with type 2 diabetes mellitus in control group (n = 35)

Blood Glucose Level	Normal (70-100 mg/dl)		Controlled diabetes mellitus (101-126 mg/dl)		Uncontrolled diabetes mellitus (above 126 mg/dl)	
	No.	%	No.	%	No.	%
Pretest	0	0	0	0	35	100.0
Post Test	0	0	1	2.86	34	97.14

The above table 3 shows that in the pretest, all 35(100%) had uncontrolled diabetes mellitus above 126 mg/dl. Whereas in the post test, 34(97.14%) had uncontrolled diabetes mellitus

above 126 mg/dl and 1(2.86%) had controlled diabetes mellitus among type 2 diabetes mellitus in the control group.

## Effectiveness of ladies finger juice on blood glucose level among adults with type 2 diabetes mellitus in experimental and control group

**Table 4:** Comparison of pretest and post-test level of blood glucose among adults with type 2 diabetes mellitus in the experimental and control group. (n = 35)

Group	Blood Glucose	Mean	S.D	Paired 't' test Value
Experimental	Pretest	222.80	59.99	t = 8.332
	Post Test	155.31	39.27	p = 0.0001 S***
Control	Pretest	218.20	61.24	t = 1.406
	Post Test	218.06	61.41	p = 0.169 N.S

\*\*\* $p < 0.001$ , S – Significant, N.S – Not Significant

The table 4 depicts that the pretest mean score of blood glucose in the experimental group was 222.80 with standard deviation 59.99 and the post-test mean score of was 155.31 with standard deviation 39.27. The calculated paired 't' test value of  $t = 8.332$  was found to be statistically significant at  $p < 0.001$  level. It was found that there was significant improvement in the level of blood glucose which clearly infers that ladies finger juice on blood glucose level was found to be effective in reducing the level of level of blood glucose among adults with type 2 diabetes mellitus in the experimental group.

The table 5 also depicts that the pretest mean score of blood glucose in the control group was 218.20 with standard deviation 61.24 and the post-test mean score of was 218.06 with standard deviation 61.41. The calculated paired 't' test value of  $t = 1.406$  was not found to be statistically significant. This clearly infers that there was no significant improvement was observed between the pretest and post-test level of blood glucose among adults with type 2 diabetes mellitus in the control group.

### Conclusion

The results of the present study revealed that there was significant improvement in the post test level of blood glucose in the experimental group which clearly infers that ladies finger juice on blood glucose level was found to be effective in reducing the level of level of blood glucose. among adults with diabetes mellitus in the experimental group than the control group.

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### Authors Contribution

All the authors actively participated in the work of the study. All authors read and approved the final manuscript.

### Conflict of interest

Author declare no conflict of interest

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