EFFECTIVENESS OF AMLA JUICE IN REDUCING BLOOD GLUCOSE LEVEL AMONG PATIENTS WITH TYPE II DIABETES IN A SELECTED AREA OF KANYAKUMARI DISTRICT

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ABSTRACT

Challenges in lifestyle, such as increases in energy intake and decreases in physical activity are causing overweight and obesity leading to epidemic increases in type II Diabetes Mellitus. The research approach used for this study was evaluative approach and the research design was true experimental design. 60 patients with type II diabetes, 30 in experimental group and 30 in control group were selected for this study by using purposive sampling technique. Data was collected with the help of self-structured interview schedule. Descriptive statistics (frequency, percentage, mean and standard deviation) and inferential statistics (chi-square, paired 't' test) were used to analyse the data and to test the hypotheses. In the experimental group, the pre-test mean score was 2.966, mean percentage was 59% and standard deviation was 1.129 and in post- test mean score was 2.533, mean percentage was 50.66% and standard deviation was 1.074 with effectiveness of 8.34% and paired 't' test value of $t=3.971$, which was statistically significant ($p<0.05$) which is an evidence of the effectiveness of Amla juice in reducing blood glucose level. Comparison of blood glucose levels in experimental and control groups, shows that the value is statistically highly significant, as was observed from the unpaired 't' test value of 13.39 with P value of <0.05 , which is an evidence indicating the effect of Amla juice in reducing postprandial blood glucose levels. The results found that the administration of Amla juice did have an effect in reducing blood glucose level in the experimental group. By comparing the findings of pre-test and post test between the experimental group and the control group, the effect was identified (assessed). The study concluded that the Amla juice is effective in reducing blood glucose level.

Keywords: Amla juice; Blood sugar; Type II Diabetes.

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INTRODUCTION

Challenges in lifestyle, such as increases in energy intake and decreases in physical activity are causing overweight and obesity leading to epidemic increases in type II Diabetes Mellitus. Diets with low glycemic index (41) and as well as low glycemic load diets are associated with a reduced risk of type II Diabetes. As the worldwide incidence of diabetes increases two to four-fold, the search for dietary adjuncts to treat this life altering disease has become far ranging. The dietary components beneficial in prevention and treatment of these diseases have not been clearly defined, but it is postulated that some home remedies may play a role. Botanical products can improve glucose metabolism as well as overall conditions of individuals with diabetes not only by hypoglycaemic effects but also by improving lipid metabolism, antioxidant status, and capillary function. A number of medicinal or culinary herbs have been reported to yield hypoglycaemic effects in patients with diabetes. Amla belongs to Phyllanthaceae family of trees. It is also known as Indian gooseberry. The botanical name of Amla is *Emblica officinalis*. There are several other names of Amla in different languages of India, like for instance it is called Nellikkai in Tamil. The Amla fruit is rich in vitamin C (ascorbic acid) and is a source of invaluable minerals such as calcium, magnesium, potassium, iron, copper, as well as a source of amino acids.

NEED FOR THE STUDY

Diabetes affects all the people in the society, not just those who live with it. The world health organization estimates that mortality from diabetes and heart disease cost India in billions every year. This estimate is based on lost productivity, resulting primarily from premature death. So, with such a huge population of patients with type II diabetes, the country is known as the diabetes capital of the world. According to the university of Maryland Medical Center Indian gooseberry/ Amla is an effective traditional remedy which contains chromium, a mineral that regulates carbohydrate metabolism and may make the body more responsive to insulin helping to keep blood sugar at healthy levels.

Akhtar et al., (2019) conducted the study of anti-hyperglycaemic and lipid-lowering properties of Amla fruit, in normal, as well as diabetic human volunteers. The results indicated a significant decrease in fasting and 2 hours post-prandial blood glucose levels on the 21st day, in both normal and diabetic subjects receiving 1, 2 or 3g of Amla powder per day as compared with their baseline values. Significant decreases were also observed in TC and triglycerides on day 21 in both normal and diabetic volunteers that were given either 2 or 3g of Amla powder per day. Both normal and diabetic volunteers receiving 2 or 3g of Amla powder significantly improved high-density lipoprotein-cholesterol and lowered low-density lipoprotein-cholesterol levels.

STATEMENT OF THE PROBLEM

'Effectiveness of Amla juice in reducing blood glucose levels among patients with type II diabetes in a selected area of Kanyakumari District'

OBJECTIVES

1. To assess the post prandial blood glucose level of patients with type II diabetes.
2. To evaluate the effectiveness of Amla juice consumption on post prandial blood glucose level of patients with type II diabetes.
3. To find out the association between the demographic and clinical variables and the post prandial blood glucose levels of patients with type II diabetes.
4. To assess the level of satisfaction among patients with type II Diabetes in experimental group upon Amla juice administration.

HYPOTHESES

- H₁:** There will be significant difference between the blood sugar readings before and after the intake of Amla juice in the experimental group.
- H₂:** There will be significant difference in the post-test blood sugar levels of type II diabetic patients between the experimental group and the control group.
- H₃:** There will be significant association of the mean blood sugar reading with selected demographic variables of patient subjects like age, gender, occupation, nature of work, type of family, duration of illness, regularity of taking medications, sleeping hours and exercise.

RESEARCH METHODOLOGY

Research approach: Quantitative approach.

Research design: True experimental Research design

Setting of the study: Conducted in Kattuputhur village in Kanyakumari district of Tamil Nadu .

Population: Patients with type 2 diabetes in Kattuputhur village in kanyakumari district.

Sample and Sampling Technique —

Sample and sample size: 60 patients with type 2 diabetes (30 in experimental group and 30 in control group)

Sample Technique: Purposive sampling technique

Description of the Tool —

Tool consisted of 3 sections —

Section I: Demographic variables of subjects like age, gender, occupation, nature of work, type of family, duration of illness, regularity of taking medications, sleeping hours and exercise.

Section II: Blood glucose assessment chart

Section III: Rating scale on satisfaction about Amla juice

FINDINGS

The study results noted the pre-test scores of the experimental and control group. In the experimental group, the post prandial blood glucose level scoring was 13% in normal, 20% in mild, 27% in moderate, 30% in severe, 10% in very severe level. In the control group, the scoring was 10% in normal, 30% in mild, 27% in moderate, 23% in severe and 10% in very severe level. Regarding the post-test score of the experimental group, the post prandial blood glucose level scoring was 27% in normal, 23% in mild, 30% in moderate, 13% in severe, 7% in very severe levels. Regarding the post-test score of the control group, the post prandial blood glucose level scoring was 7% in normal, 20% in mild, 33% in moderate, 30% in severe and 10% in very levels.

Table – 1: Paired 't' test result showing significant difference between post prandial blood glucose levels of patients with type II diabetes in experimental group

Experimental group	Overall score	Mean	Mean %	SD	Effect	't' test	P value
Pre-test	5	2.966	59	1.129	8.34	3.971	P < 0.05 Significant
Post-test	5	2.533	50.66	1.074			

Table – 2: Paired 't' test result showing significant difference between post prandial blood glucose levels of patients with type II diabetes in control group

Control group	Overall score	Mean	Mean %	SD	Effect	't' test	P value
Pre-test	5	2.933	58.6	1.172	4.7	1.756	P > 0.05 Not significant
Post-test	5	3.166	63.3	1.085			

In the experimental group the pre-test mean score was 2.966, mean percentage was 59% and standard deviation was 1.129 and in the post-test, the mean score was 2.533, mean percentage was 50.66% and standard deviation was 1.074 with the effectiveness of 8.34% and paired 't' test value of $t=3.971$ which was statistically significant ($p<0.05$). This is an evidence indicating effectiveness of Amla juice in reducing blood glucose level. Comparison between, blood glucose levels in experimental and control group, shows that the values are statistically significant that was observed from the unpaired 't' test value of 13.39 with the p value of <0.05 , which is an evidence indicating the effect of Amla juice in reducing blood glucose levels. This led the researcher to reject the null hypothesis

CONCLUSION

The study assessed the effect of Amla juice in reducing blood sugar level among patients with type II diabetes. The result found in the experimental group was that administration of Amla juice did have effect in reducing blood glucose level. By comparing the findings of experimental group and control group in pre-test and post test, the effect was identified (assessed). Thus, the study concluded that the Amla juice is effective in reducing blood glucose level.

RECOMMENDATIONS

1. A similar study can be undertaken on a larger scale for better generalisation.
2. The study can be replicated in different settings.
3. The study can be conducted to assess the effectiveness of Amla juice in the management of Hyperlipidemia.

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