Original Research Paper

Nursing

EFFECT OF AMLA POWDER ON THE LEVEL OF BLOOD SUGAR AMONG PATIENTS WITH TYPE II DIABETES

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ABSTRACT | Type II diabetes mellitus is a global public health crisis that threatens the economies of all nations particularly developing countries. This study has been conducted to assess the effect of Amla powder on the level of blood sugar among patients with type II diabetes mellitus. Quantitative research approach, quasi experimental nonrandomized control group design was used for the study. 60 samples were selected by purposive sampling technique. Pre-test and post-test blood sugar level were assessed by using a standardized glucometer. The collected data were analysed by using descriptive and inferential statistics. The result of the study shows that, on comparing the experimental and control group it was found that the blood sugar level was reduced among patients with type II diabetes mellitus after administration of Amla powder. Thus it can be concluded that the Amla powder is effective in reducing the blood sugar among patients with type II diabetes mellitus.

INTRODUCTION

Diabetes mellitus is a chronic multisystem disease related to abnormal insulin production, impaired insulin utilization or both. The major risk factors for diabetes mellitus include family history of diabetes, obesity (BMI $\geq$ 27kg/m^2), race/ethnicity (e.g. African Americans, Hispanic Americans, Native Americans, Asian Americans, Pacific Islanders), age $\geq$ 45 years, previously identified impaired fasting glucose or impaired glucose tolerance, hypertension (BP $\geq$ 140/90mm Hg), HDL cholesterol level $\leq$ 35 mg/dl, and/or triglycerides level $\geq$ 250mg/dl and history of gestational diabetes or delivery of babies over 9 lb. The causes of diabetes are singly or in combination of genetic, autoimmune and environmental factors (e.g. virus, obesity). Along with these causes pancreatitis or pancreatectomy, polycystic ovarian syndrome, cushing syndrome, glucogonoma and steroid use also lead to diabetes mellitus.

According to the latest 2016 data from the World Health Organization (WHO), is estimated that 422 million adults are living with diabetes mellitus globally and this number is projected to almost double by 2030. The WHO estimates that diabetes resulted in 1.5 million deaths in 2012, making it the eighth leading cause of death.

According to the International Diabetes Foundation, India had more diabetes rather than any other countries in the world. Diabetes currently affects more than 62 million Indians, which is more than 7.1% of the adult population. The averageage of onset is 42.5 years. Nearly 1 million Indians die due to diabetes every year.

Kerala has the largest number of diabetes patients followed by Tamil Nadu and Punjab. A study conducted by Sree Chitra Tirunal Institute for Medical Sciences and Technology, Thiruvananthapuram and Indian Council of Medical Research, reported that 19.4% of people have diabetes in Kerala, the corresponding figures in Chandigarh and Tamil Nadu are 13.6% and 10% respectively. One study from Central Kerala reported prevalence of diabetes at 20% and pre-diabetes at 11%. Another study from the Southern Kerala, showed the prevalence was 17% in urban, 10% in the midland, 7% in the highland and 4% in the coastal region.

A study was conducted to evaluate the anti-hyperglycaemic and lipid-lowering properties of Emblica Officinalis Gaertn fruit in normal and diabetic human volunteers by Department of Pharmacy, Pakistan. A total of 32 volunteers (16 diabetic patients and 16 age-matched and gender-matched normal subjects) were divided into two main groups, in which the normal human volunteers were divided into the four groups A, B, C and D and diabetic patients were also divided into four groups E, F, G and H comprising four volunteers in each group. Carboxymethylcellulose fiber was given to group A and Tab. Glibenclamide, 5mg is given twice daily for group E that acted as control, while groups B and F, C and G and D and H, were given1, 2 or 3g powdered E. officinalis fruit orally with 30ml water once daily in the morning after breakfast which acted as experimental group. However, diabetic volunteers receiving only 3g E. officinalis powder exhibited a significant decrease in total lipids on day 21. Both normal and diabetic volunteers receiving 2 or 3g E. officinalis powder significantly improved high-density lipoprotein- cholesterol and lowered low-density lipoprotein-cholesterol levels.

MATERIALS AND METHODS

In this study quantitative research approach was used to assess the effect of Amla powder on the level of blood sugar among patients with type II diabetes mellitus. The research design adopted for the study was nonrandomized control group design. The present study was conducted at selected community in Thiruvananthapuram district at ward II (Nilamel) and ward VI (Aadumankadu) of Neyyattinkara Taluk. Neyyattinkara is located in the southern part of Thiruvananthapuram. The present study sample size consists of 60 patients with type II diabetes mellitus between 30 and 60 years who full filled the inclusion criteria.

30 samples assigned for experimental and 30 for control group. Samples were instructed to continue their regular medication and life style modification. For the experimental group 3g of Amla powder with 30ml of water was provided after the breakfast for a period of 30 days continuously. No intervention was provided for control group. Post-test I was done on 16th day and post-test II was done on 31stday for the experimental group and the control group.

RESULTS
Description of sample characteristics
- 40% of samples in the experimental and control group were in the age group of 51-60 years. 50% of samples were males in both experimental and control group.
- 53.33% of samples in the experimental group had completed their high school education and 43.34% of samples in the control group had completed their higher secondary education. 63.34% of samples in the experimental group and 40% of samples in the control group were not having any habits like smoking, alcoholism, or other habits
- 46.67% of samples in the experimental group and 33.33% of samples in the control group had monthly income of Rs. 5000-10000/-. 36.67% of the samples in the experimental group and 43.34% of samples in the control group were diagnosed diabetes mellitus 7-8 years before.

- 53.33% of samples in the experimental and control group have regular treatment schedule. 53.33% of the samples in the experimental group and 56.67% of the samples in the control group were following diabetic diet.

- 80% of samples in the experimental group and 83.33% of samples in the control group were not doing any exercise. 20% of samples in the experimental group and 16.67% of samples in the control group were doing exercises. In experimental group 50% of samples perform both walking and cycling and in control group 100% of samples perform walking.

Table – 1: Mean, standard deviation and t value of pre-test and post-test I level of fasting blood sugar   (n=30)

Group	Mean	SD	Mean difference	Paired 't' test	P
Experimental group Pre-test	150.83	13.98	18.41	*5.09	2.05
Post-test I	132.43	13.98			
Control group Pre-test	147	13.74			
Post-test I	148.13	15.01	1.13	-0.30	2.05

*Significance at 0.05 level

Table – 2: Comparison between pre-test and post-test level of fasting blood sugar based on experimental and control group

Experimental FBS		Control		Mean difference	t	P
	Mean SD	Mean SD				
Pre-test	150.83 13.98	147 13.74	3.83	-1.6	2.0
Post-test I	132.43 13.98	148.13 15.01	15.7	*14.19	2.0
Post-test II	155.20 12.72	155.57 17.88	40.37	*10.07	2.0

*significance at 0.05 level

DISCUSSION

From the present study, by comparing the experimental and control group, it was found in the pre-test that the mean score of fasting and postprandial blood sugar of experimental group were 150.83 and 267.33 respectively. In the post-test the mean score of fasting blood sugar 115.2 and postprandial blood sugar 180.10 was significantly reduced. It shows that the blood sugar level was reduced among patients with type II diabetes mellitus after administration of Amla powder. The obtained 't' value was statistically significance at 0.05 level. This shows the effectiveness of Amla powder. It is interpreted that there is a significant difference in the blood sugar level of patients with type II diabetes mellitus. Hence the intervention of administering Amla powder among patients with type II diabetes mellitus had a positive impact on the level of fasting and postprandial blood sugar. The hypothesis of the study was intended to show the significant difference in the level of blood sugar before and after administering Amla powder among patients with type II diabetes mellitus.

Findings of the study showed that in the post-test there was a decline in the level of blood sugar. Highly significant differences were found between pre- test and post-test level of blood sugar. Hence it is revealed that administration of Amla powder was an effective intervention for reducing blood sugar level among patients with type II diabetes mellitus.

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