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A Study to Assess the Effectiveness of Occimum Sanctum to Reduce Blood Glucose Level Among Old Client with type 2 Diabetes Mellitus in Kondancherry, Thiruvallur

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ABSTRACT: Diabetes mellitus (DM) frequency is a growing problem worldwide, because of long life expectancy and life style modifications. In old age (≥ 60 –65 years old) The World Health Organization (WHO) has reported 24 million cases of diabetic neuropathy, 5 million cases of retinopathy, and 6 million cases of amputation due to diabetes. The mortality in individuals with diabetes is chiefly due to cardiac complications. So the present study aims to assess the effect of occimum sanctum extract to reduce blood glucose level among old age client with type 2 diabetes mellitus in Kondancherry village, Thiruvallur. A quantitative research approach with quasi experimental research design was adopted to conduct the study. The study conducted among 60 clients, in that 30 clients undergone study group and another 30 undergone control group, they are selected by using purposive sampling technique. Semi structured questionnaires were used to collect the demographic variables and clinical variables. The pre interventional blood glucose level was assessed by using glucometer. The occimum sanctum extract was given to study group about 50ml for 4 weeks and post test level was assessed in both groups. The obtained pretest and post test level of blood glucose was analysed by using descriptive and inferential statistics. The result of the study shows that among 60 patients, in experimental group clients prove that the pre and post assessment of blood sugar level in study group the result shows that the mean value of pre test is 172.27 and post test is 140.23. In the difference of mean value (32.033) and SD (11.467) value there is an increase of 11.467 SD value when comparing the pre and post test blood sugar level. $t=15.301$ with $df=29$ and the p value is 0.000 it is statistically significant. Hence the finding of the study shows that the occimum sanctum extract was effective to reduce blood glucose level among client with type 2 diabetes mellitus.

KEYWORDS: old age client, type 2 diabetes mellitus, occimum sanctum extract, blood glucose level.

I. INTRODUCTION

Diabetes mellitus (DM) is a chronic metabolic disease characterized by hyperglycemia and high glycated hemoglobin with or without glycosuria.

Chronic hyperglycemia leads to damage and failure of various organs, especially the heart, blood vessels, eyes, kidneys, and nerves. (1) Type 2 diabetes represents the most common metabolic disease in older adults. According to the latest estimates of the International Diabetes Federation (IDF), diabetes shows a high prevalence in people older than 65 years. In 2017, the number of diabetic people aged 65–99 was estimated to be 122.8 million (around 18% of prevalence rate), of whom 98 million had <80 years (65–79 years); these numbers are expected to easily exceed 200 million in 2045. (2) Type 2 diabetes has a heterogeneous pathophysiology, with complex interactions between age-



related physical conditions and a wide range of risk factors, which make effective prevention and control of this metabolic disorder more challenging.(3) The complication of diabetes mellitus include retinopathy, peripheral neuropathy, coronary heart disease and heart failure, stroke, peripheral vascular disease, infections, cognitive disability, liver disease and functional disability.(4) Tulsi leaves are known as elixir of life because of their diverse healing properties. From warding off some of the most common ailments, strengthening immunity, to fighting bacterial & viral infections-the benefits of tulsi are multifarious. This herb is said to improve pancreatic beta-cell function and insulin secretion, and further increases the uptake of glucose by muscle cells.(5) The extracts of holy basil leaf have also lowered blood sugar, reduced some measures of the response to physical stresses, recent trends and current innovations create a very good opinion on alternative therapy and Indian medicines, so the investigator took this study to assess the effectiveness of holy basil leaves extract on lowering blood sugar level.(6)

II. METHODS AND MATERIALS

Quantitative approach was used in this study and quasi experimental research design was adopted for this study. The sample size comprised 60 clients, in experimental 30 samples and control group 30 samples. Inclusion criteria were Old age client above 60 years old. Client who is willing to participate the study. Client who knows Tamil/English language. Client without physical disability. The exclusion criteria was Client who have communicable disease. Client who have other associated disease condition. Client who is not available during the study. Client undergone insulin therapy. The study was conducted at Kondancherry village Thiruvallur, after obtaining formal permission the Principal of Saveetha College of Nursing. An authorized setting permission was obtained from, Kondancherry Panchayat and peoples. A total of 60 samples who met the inclusion criteria were selected by using convenience sampling technique for the study. In the experimental 30 samples was received the occimum sanctum extract as intervention. Remaining 30 in the control group was not received intervention and routine treatment was given. The investigator administered structured questionnaire to obtain demographic and clinical data for duration 20 minutes. Patients was advised to taken 50 ml of occimum sanctum extract in morning before taking the medicine for diabetes mellitus. The patient was advised to follow the intervention for 4 week, the post test was conducted to assess the blood glucose level. The control group was received only regular routine treatment. The data was tabulated and analyzed by descriptive and inferential statistics.

III. RESULT AND DISCUSSION

Section A: shows that most of the old age clients in the experimental group, 11(36.7%) were aged between 60 – 65 and 66 – 70 years respectively, 18(60%) were male, 16(53.3%) were married, 20(66.7%) belonged to nuclear family, 18(60%) were illiterates and 15(50%) had two children. Also shows that in the control group, most of the old age clients, 9(30%) were aged between 60 – 65 and 66 – 70 years respectively, 16(53.3%) were male, 19(63.3%) were married and were belonged to nuclear family, 15(15%) had schooling and were graduates respectively and 11(46.7%) had one child. In the experimental group and majority of them were females 56.7%(17) in both control and experimental group on the basis of religion most of them are Hindus 88.3%(26) in experimental and 90%(27) in control group. Majority of the Type II Diabetic Patients 50.0%(15) in experimental and control group were educated up to secondary school level, very less percentage 3.3% (1) in experimental and 6.7% (2) in control group were illiterate, around 10% (3) in experimental and 3.3% (1) in control group were diploma holders, only 3.3% (1) in control group were graduate, same percentage of participants in both group 6.7% (2) were completed their higher secondary education. Majority of the diabetic clients 90% (27) in control group were non vegetarian, Among Type II Diabetic clients only 26.7%(8) in control group and 33.3% (10) in experimental group were following exercise in their daily activity, and majority of them 23.3%(7) in control and 30%(9) in experimental were doing walking.

Section B: The result shows that the medical related information about the study participants among the participants most of them 50%(15) in experimental, 56.7%(17) in control group were having family history of diabetes mellitus, and in that 23.3%(7) in control group and 50%(15) in experimental group members father had diabetes mellitus, and same percentage 20%(6) of 60%(18) control group participants were having diabetes more than 5 years, about



23.7%(7) of participants in both group have excessive thirst, hunger and urination. Among the type II diabetes clients around 56.7 %(17) of participants in both group are on medication above 5 years, and around 83.3 %(25) were on regular treatment. All the type II diabetic clients are taking allopathic medication among that 100 %(30) in experimental and 86.7 %(26) in control were taking Tab. Most of the participants believed complication of DM is eye problem 23.3 %(7) in experimental and 20 %(6) in control group.

Section C: The comparison of pre test and post test Blood sugar level among Experiment and Control group. It shows that the comparison was made by student independent test and the t value of pre test among Experiment and Control group is 4.68 , df =58, p=0.001 is statistically significant. Likewise the t value of post test among Experiment and Control group is - 5.01, df = 58, p= 0.001 it is also statistically significant.

Section D:The result shows the effectiveness of the study. It reveals that there is 18.6% of reduction found in experimental group but in control group there is only 1.22%. Around 17.38% of reduction of blood sugar level in experimental group when compared with the control group. Thus the hypothesis was proved.

Table 1: Distribution of Demographic Variables of client with Type II Diabetic mellitus.
N = 60(30+30)

Demographic Variables	Experimental Group		Control Group	
	F	%	F	%
Age in years				
60 – 65 years	11	36.7	9	30.0
66 – 70 years	11	36.7	9	30.0
71 – 75 years	6	20.0	5	16.7
Above 75 years	2	6.6	7	23.3
Gender				
Male	18	60.0	16	53.3
Female	12	40.0	14	46.7
Marital status				
Married	16	53.3	19	63.3
Unmarried	-	-	-	-
Widow/Widower	14	46.7	11	36.7
Divorced / Separated	-	-	-	-
Type of family				
Nuclear	20	66.7	19	63.3
Joint	10	33.3	11	36.7
Educational status				
Schooling	12	40.0	15	50.0
Graduate	-	-	-	-
Illiterate	18	60.0	15	50.0
No. of children				
No child	1	3.3	0	0
One child	4	13.3	11	46.7
Two children	15	50.0	10	33.3
More than two children	10	33.3	9	30.0

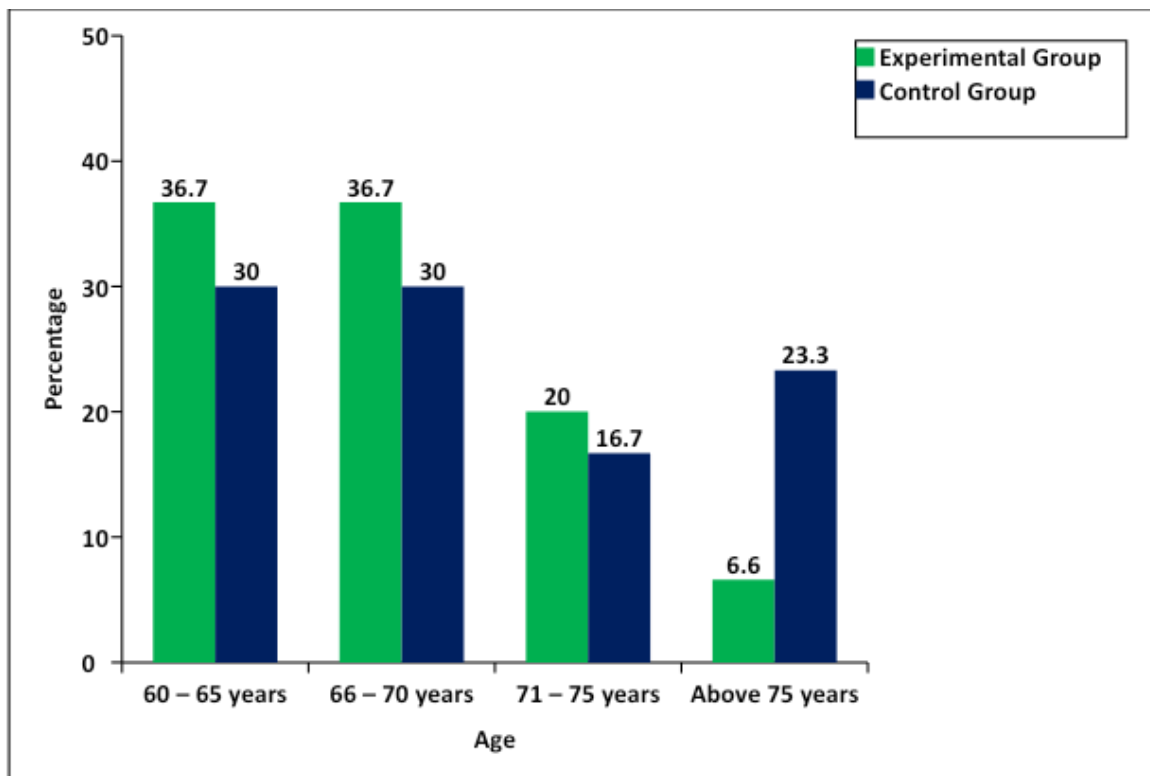


Figure 1: Bar diagram showing Percentage distribution of age of the old age clients in the experimental and control group

Table 2: Pre and post assessment of blood sugar level among experimental and control group.

Type of blood sugar	Group	N	Mean	SD	Paired t test
Pre test	Experiment	30	172.27	9.720	t= 4.68 ** p =0.001
	Control	30	159.27	11.715	
Post test	Experiment	30	140.23	14.330	t =- 5.01 ** p = 0.001
	Control	30	157.33	11.828	

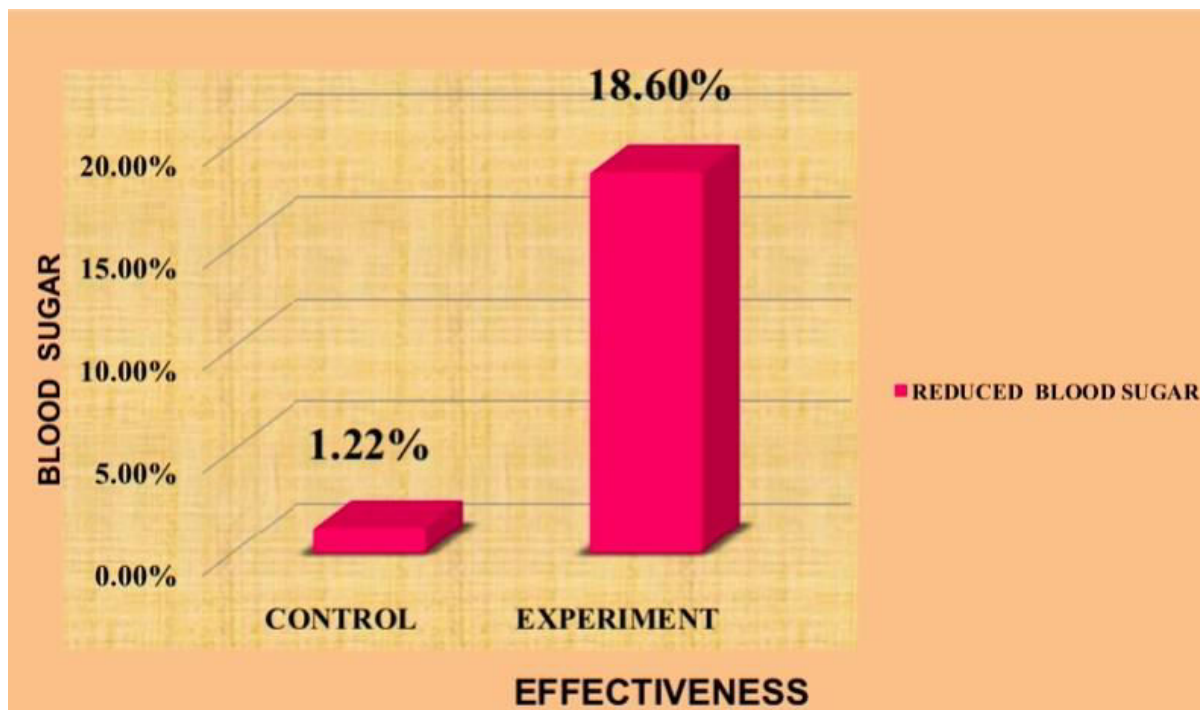


Figure 2: Bar diagram showing that Effectiveness of occimum sanctum among experimental group

Table 3: Association between level of blood sugar reduction and their clinical related variables (Experimental Group)

Variables		Level of Blood sugar								Total		Chi square
		Decrease <10		Decrease 10-19		Decrease 20-29		Decrease 30 & above				
		N	In %	N	In %	N	In %	N	In %	N	In %	
Family history	Yes	0	-	2	6.7	2	6.7	11	36	15	50	X ² =3.093 P=0.378
	No	1	3.3	1	3.3	5	16.7	8	42.1	15	50	
Relationship	Father	0	-	2	6.7	0	-	3	10	5	16.7	X ² =10.772 P=0.292
	Mother	0	-	0	-	2	6.7	4	13.3	6	20	
	sibbling	0	-	0	-	0	-	4	13.3	4	13.3	
Duration of illness	< 1year	0	-	0	-	0	-	2	6.7	2	6.7	X ² =13.348 P=0.147
	1-3year	0	-	0	-	4	13.3	1	3.3	5	16.7	
	3-5year	0	-	0	-	1	3.3	4	13.3	5	16.7	
	>5 year	1	3.3	3	10	2	6.7	12	40	18	60	
Symptoms before diagnosed	Giddiness	1	3.3	1	3.3	2	6.7	8	26.7	12	40	X ² =12.850 P=0.380
	LKXQJHU, WKUXVW, urination	0	-	1	3.3	2	6.7	4	13.3	7	23.3	
	Itching in genital area	0	-	0	-	2	6.7	3	10	5	16.7	
	All the above	0	-	1	3.3	0	-	0	-	1	3.3	



	Not known	0	-	0	-	1	3.3	4	13.3	5	16.7	
Duration of treatment	< 1 year	0	-	0	-	0	-	2	6.7	2	6.7	X ² =13.787 * P= 0.030
	1-3 year	0	-	0	-	4	13.3	1	3.3	5	16.7	
	3-5 year	0	-	0	-	1	3.3	5	16.7	6	20	
	>5 year	1	3.3	3	10	2	6.7	11	36.7	17	56.7	
Regularit y of treatment	yes	1	3.3	3	10	5	16.7	16	53.3	25	83.3	X ² = 1.525 P= 0.677
	No	0	-	0	-	2	6.7	3	10	5	16.7	
Drugs	Metformin	1	3.3	3	10	7	23.3	19	63.3	30	100	Constant
Experienc ed Hypo glyce mic symptoms	Giddiness	1	3.3	1	3.3	2	6.7	8	26.7	12	40	X ² =11.9 22 P= 0.218
	Profus e sweati ng	0	-	0	-	2	6.7	3	10	5	16.7	
	palpitation	0	-	1	3.3	0	-	0	-	1	3.3	
	Others	0	-	1	3.3	3	10	8	26.7	12	40	
Knowled ge of complicati on	Eye problem	1	3.3	1	3.3	3	10	2	6.7	7	23.3	X ² =13.839 P=0.740
	Kidney problem	0	-	0	-	0	-	4	13.3	4	13.3	
	Nerve problem	0	-	0	-	0	-	1	3.3	1	3.3	
	Cardiac problem	0	-	0	-	1	3.3	2	6.7	3	10	
	Foot ulcer	0	-	2	6.7	1	3.3	3	10	6	20	
	CVA	0	-	0	-	1	3.3	4	13.3	5	16.7	
	others	0	-	0	-	1	3.3	3	10	4	13.3	

≤

* Significant -----p =0.05 ** - highly significant----- p =0.001 *** - very high significant p =0.0001

IV. CONCLUSION

In hence the finding of the study shows that the occimum sanctum extract was effective in reducing the blood glucose level among client with type 2 diabetes mellitus.

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Author's contribution

All the authors are participated well in the work of the study. All authors are read and approve the final manuscript.

Conflict of the interest

The authors declare no conflict of interest.

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