

A Study to assess the effectiveness of video assisted teaching regarding aerobic exercises and practice to maintain the blood glucose level among diabetes in crescent hospital, Alathur, Palakkad.

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Abstract: Diabetes is fast gaining the status of a potential epidemic in India with more than 62 million diabetic individuals currently diagnosed with the disease. In 2000, India (31.7 million) topped the world with the highest number of people with diabetes mellitus followed by China (20.8 million) with the United States (17.7 million) in second and third place respectively. The prevalence of diabetes is predicted to double globally from 171 million in 2000 to 366 million in 2030 with a maximum increase in India. In addition to this, the complications associated with diabetes is also in the higher rate.⁴

The Management of diabetes is most critical part, Lifestyle modifications like dietary modifications, physical activity like aerobic exercise, some major drugs of diabetes management, insulin therapy, foot care of diabetes and annual screening. Most of the patients are economically poor. So the researcher found that aerobic exercise is economical and have lot of health benefits on diabetic patients.

Aim: The aim of study is to check the effectiveness of video assisted teaching regarding aerobic exercise and practice to maintain blood glucose level among diabetes.

Methodology: The research approach adopted for the present study is an Quantitative research approach and the design adopted was quasi experimental design. The setting for the study was Crescent Hospital, Alathur .Palakkad, Kerala. The sample size of the present study was 50, simple random sampling technique was used to select samples.

Finding: The pre test and post mean value of blood glucose among experimental and control group was 173.2,149.96 &153.16 ,148.92 .The pre test and post mean score of knowledge on practice among experimental and control group was 11.4,15.08 and 11.04,11.68 .In experimental group the obtained 't' value for the blood glucose was 2.347 and obtained 't' value knowledge on practice was 8.742 .The demographic variables had no association with the post blood glucose value . **Conclusion:** The present study result shows the effectiveness of video assisted teaching regarding aerobic exercise in reduction of blood glucose level among diabetes.

Key Words: Video assisted teaching(VAT), Effectiveness, Aerobic exercise ,practice, Blood Glucose , diabetes.

I. Introduction

There is a natural healing force within us and it is the greatest force in getting well.

- **Hippocrates**

Sanjay Kumar Gupta et al (2010), conducted study on Diabetes Prevalence and its Risk Factors in Rural Area of Tamil Nadu , Great efforts have been made by developed countries to control infectious diseases, but non-communicable diseases have not received much attention. Diabetes mellitus is one of the non-communicable diseases which have become a major global health problem. In Asia, prevalence of diabetes is high and it has been estimated that 20% of the current global diabetic population resides in South- East Asia .¹

Diabetes Mellitus represents several chronic, heterogeneous disorders characterized by hyperglycemia and usually, urinary glucose excretion. Insulin absence or deficiency or inefficient peripheral cell insulin use impairs the body's carbohydrate metabolism.²

Type 1 diabetes is usually diagnosed in children and young adults, and was previously known as juvenile diabetes. Only 5% of people with diabetes have this form of the disease.³

Seema Abhijeet Kaveeshwar and Jon Cornwall (2014), conducted study on The current state of diabetes mellitus in India .Diabetes mellitus is reaching potentially epidemic proportions in India. The level of morbidity and mortality due to diabetes and its potential complications are enormous. Given the disease is now highly visible across all sections of society within India, there is now the demand for urgent research and intervention - at regional and national levels .⁴

Dr.V.Mohan and Dr.Pradeepa(2009) , conducted a Study on Epidemiology of Diabetes in Different Regions of India . Diabetes is fast becoming the epidemic of the 21st century. Type 2 diabetes , which is more prevalent (more than 90% of all diabetes cases), now affects 5.9% of the world's adult population with almost 80% of the total in developing countries.⁵

Kumar and Clark (2005) .Type II diabetes is relatively common in all population enjoying affluent life style. The four major determinants for development of type II diabetes mellitus are increase in age, obesity, ethnicity and family history .⁶

The World Health Organization (2012) estimates that nearly 200 million people all over the world suffer from diabetes and this number is likely to be doubled by 2030. In India, there are nearly 50 million diabetics, according to the statistics of the International Diabetes Federation. The people should be made aware and educated about their health and fitness level to reduce the number of patients in India.⁷

The Management of diabetes is most difficult part .Lifestyle modifications like dietary modifications, physical activity, some major drugs of diabetes management, insulin therapy, foot care of diabetes and annual screening. To manage Diabetes patients need a well planned teaching in all aspects of diabetic care.

Need For The Study:

Sheri R. Colberg et al (2010) conducted study on Exercise and Type 2 Diabetes,in their study shows that Exercise plays a major role in the prevention and control of insulin resistance, pre diabetes, type 2 diabetes, and diabetes-related health complications. Both aerobic and resistance training improve insulin action, at least acutely, and can assist with the management of blood glucose levels, lipids, blood pressure, mortality, and quality of life, but exercise must be undertaken regularly to have continued benefits and likely include regular training of varying types.⁸

Huseyin Naci, fellow John P A Ioannidis (2013) conducted study on Comparative effectiveness of exercise and drug interventions on mortality outcomes: metaepidemiological study,Although limited in quantity, existing randomised trial evidence on exercise interventions suggests that exercise and many drug interventions are often potentially similar in terms of their mortality benefits in the secondary prevention of coronary heart disease, rehabilitation after stroke, treatment of heart failure, and prevention of diabetes.⁹

Michael Riddell, Bruce A. Perkins (2009) , conducted study on Exercise and Glucose Metabolism in Persons with Diabetes Mellitus: Perspectives on the Role for Continuous Glucose Monitoring,in their study result shows that active patients with type 1 diabetes may feel a higher level of self-efficacy and sense of reassurance, however, in knowing what direction their blood glucose is heading toward during exercise and the ability to respond rapidly to glycemic excursions may improve their exercise recovery. In persons with type 2 diabetes, this technology appears to be a useful adjunct to exercise counseling and lifestyle intervention .¹⁰

Zar Chi Thent, Srijit Das, and Leonard Joseph Henry (2013) ,conducted study on Role of Exercise in the Management of Diabetes Mellitus: the Global Scenario , the study revealed that the importance of types of exercise and prevalence of exercise management in type 2 diabetes across the world, within recent years. It is concluded that exercise based research for diabetes are less in the Asian countries. The present review showed that exercise related studies in diabetes were performed only in few selected countries in Asia such as Singapore, Iran and Japan and this justifies the utmost importance of future studies in Asian population .¹¹

Ferriolli E ,Pessanna FP , Marchesi JC(2014) conducted study on Diabetes and exercise in the elderly. In their study says that physical activity has been shows to be as effective for the treatment of diabetes in the elderly as in younger patients , so that its practice must be strongly encouraged ,aerobic activities should be prescribed when ever possible ,and the association of both modalities is the best choice to control glycemic level .¹²

Maria Polikandrioti,Helen Dokoutsidou(2009) conducted a study on the role of exercise and nutrition in type 2 diabetes mellitus management. In their study concluded that the patients with type 2 diabetes should be constantly informed about the crucial role on nutrition and exercise in the management of the disease .Lack of understanding of the beneficial effects of dietary choices and exercise in the regulation of type 2 diabetes, may lead to inappropriate treatment methods .¹³

Helen Altman Klein(2013) conducted a study on Diabetes Self-Management Education: Miles to Go. Type 2 diabetes, or non-insulin dependent diabetes mellitus (NIDDM), accounts for 90 to 95% of all diagnosed cases of diabetes in adults. patients experience increased risks of complications including blindness, kidney damage and failure, cardiovascular disease, nerve damage, and lower-limb amputation. ¹⁴

Lin Mu , Aaron J. Cohen and Kenneth J. Mukamal (2014). Resistance and Aerobic Exercise Among Adults With Diabetes in the U.S In their study results shows that, only 12% of U.S. adults with diabetes meet ADA resistance exercise guidelines, lower than the 21% in the general public and the 41% who meet aerobic exercise guidelines. In addition, adherence to resistance exercise guidelines is low across a broad range of different demographic subgroups. This represents an enormous opportunity for improvement in diabetes management nationwide.¹⁵

Kerala has a prevalence of diabetes as high as 20% — double the national average of 8%. The prevalence was 17% in urban, 10% in the midland, 7% in the highland, and 4% in the coastal regions.¹⁶

These evidence clearly explains the need for effective education in prevention of complication among diabetes and it suggests the need for conducting this study. The researcher came across many diabetes during the time of clinical postings and found that patients lack of knowledge in control of blood glucose level. One among is that the aerobic exercises. Most of the patients are economically poor. So the researcher found that aerobic exercise is very easy and have lot of health benefits on diabetic patients.

II. Review of Literature

Pieter de Mol et.al (2014) .Physical Activity at Altitude: Challenges for People With Diabete. In their study says that Subjects with diabetes can take part in activities at high, and even extreme, altitude. However, careful assessment of diabetes-related complications, optimal preparation, and adequate knowledge of glycemic regulation at altitude and altitude-related complications is needed.¹⁷

The latest global figures on diabetes, released by the International Diabetes Federation (IDF), has raised a serious alarm for India by saying that nearly 52% of Indians aren't aware that they are suffering from high blood sugar.¹⁸

Mohan D et al (2003) conducted a study on Awareness and knowledge of diabetes in Chennai – the Chennai Urban Rural Epidemiology study. It was Concluded that awareness and knowledge regarding diabetes is still grossly inadequate in India. Massive diabetes education programs are urgently needed both in urban and rural India.¹⁹

Farooq Mohyud Din Chaudhary (2010)et al conducted study on Evaluation of Lifestyle Modifications in Diabetic Patients. It was concluded that Diabetes was more common in female and middle age people. Healthier lifestyle modifications were noted more frequently in males, well educated and those on oral plus insulin medication.²⁰

Statement of the problem :

A Study to assess the effectiveness of video assisted teaching regarding aerobic exercises and practice to maintain the blood glucose level among diabetes in Crescent hospital , Alathur ,Palakkad.

Objectives:

1. To assess the blood glucose level of patients with diabetes mellitus among experimental and control group.
2. To assess the knowledge on practice of aerobic exercises among experimental and control group.
3. To assess the knowledge on practice of aerobic exercises among experimental and control group after Administration of video assisted teaching regarding aerobic exercises.
4. To assess the effectiveness of aerobic exercises by blood glucose level among experimental and control group.
5. To associate the blood glucose value among diabetes with their selected demographic variables .

Hypothesis:

The aerobic exercises have a significant effect on reducing the blood sugar level among patients with diabetes mellitus.

Operational definition:

Assess : In this study assess refers to examine the effect of aerobic exercises on diabetes.

Effectiveness:

In this study effectiveness refers to extent to which the aerobic exercises become successful in maintaining the blood sugar level among diabetes by video assisted teaching.

Video Assisted Teaching:

In the study it is a pre recorded video assisted teaching of aerobic exercises , which will be projected to the patients using a lap top.

Aerobic Exercises :It refers to Sub Maximal ,rhythmic ,repetitive exercise of large muscle groups during which the needed energy is supplied by inspired oxygen.

Diabetes : In this study diabetes refers to diagnosed by a doctor as having diabetes according to the clinical criteria .

Dependent Variables: Blood glucose and diabetes.

Independent Variables: Video assisted teaching regarding aerobic exercises.

Research methodology

Research approach:

Quantitative research approach -Quasi experimental subtype approach is used.

Research Design:The The research design selected for this study is quasi experimental design.

Setting Of The Study: Study was conducted at Crescent hospital with 300 bed multi specialty hospital. This hospital has Medical and Surgical Wards, Which include Diabetic Clinic .

Population: The Population includes patients who are having diabetes in Crescent hospital, Alathur, Palakkad.

Sample:The samples in this study includes the inpatients with diabetes in Crescent Hospital.

Samle Size: Sample size consists of 50 diabetes patients. Selected 25 for experimental group & 25 for control group.

Sampling Technique: Simple random sampling technique is used for selecting the sample.

Inclusion criteria:

1. Patients with diabetes diagnosed less than 1 year.
2. Patients known to write and speak Malayalam and English.

Exclusion criteria:

1. Patients with documented mental illness and anxiety disorder.

Data Collection Instrument are:

Section A :Biographic Variables

Section B :Fasting Blood Glucose Value.

Section C : Knowledge on Practice Check list .

Reliability& validity:

The tool was given medical experts, nursing experts & statistician and the tool was prepared.

III. Findings

Table 1 Description of demographic variables of diabetes among experimental and control group

S.No	Demographic variables	Experimental group		control group	
		Frequency	Percentage	Frequency	Percentage
1	Age				
	25 -30 years	8	32	4	16
	31 -35 years	4	16	7	28
	36 – 40 years	8	32	6	24
	>41 years	5	20	8	32
2	Sex				
	Male	13	52	11	44
	Female	12	48	14	56
3	Education				
	Primary school	2	8	3	12
	secondary school	6	24	5	20
	Higher secondary	7	28	9	36
	Degree	10	40	8	32
4	Occupation				
	Unemployed	5	20	4	16
	Self employed	10	40	9	36
	Labour	3	12	4	16
5	Monthly income				
	Rs 1000 -5000	4	16	1	4
	Rs 5001 -10,000	12	48	10	40
	Rs 10,001 -15000	2	8	7	28
6	Family history of illness				
	Present	8	32	4	16
7	Duration of illness				
	1 -3 months	6	24	6	24
	4 -6 months	7	28	5	20
	7 -9 months	9	36	8	32
	10 -12 months	3	12	6	24

Table 1 Observations shows the following results , in experimental group the maximum age group were between 25 -30 years &36 -40 years 8 (32%) .In Control Group the maximum age group were >41 years 8 (32%).

In experimental group the maximum were males 13 (52%) .In Control Group the maximum were females 14 (56%).

Regarding Educational observation, in experimental group the maximum were degree holders 10 (40%) .In Control Group the maximum were secondary education 9 (36%) .

In experimental group the maximum were self-employee 10(40%) .In Control Group the maximum were self-employee 9 (36%) .

In experimental group & Control Group the maximum monthly income were between the Rs 5001 - 10,000 ,12 &10 (48% & 40%) .

In experimental group & Control Group the maximum the family history of illness were absent 17 & 21, (68% & 84%) .

In experimental group & Control Group the maximum the Duration of illness were between 7 – 9 months, 9 &8 (36% & 32%) .

Table 2 Comparison of pre test & post test value of blood glucose with in experimental Group

S.No	Blood Glucose Value	Mean	Standard Deviation	t' Value	Level of Significant
1.	Pre test	173.2	41.85	2.347 *	0.05
2.	Post test	143.96	26.46		

Note - * indicate Significant

Table 2 shows that in the experimental group the pre test mean blood sugar value was 173.2 ,post test mean blood sugar value was 143.96 .The `t` value obtained was 2.347 at 24 degree of freedom and 0.05 level of significant

Table 3 Comparison of Pre test &Post test value of blood glucose with in control group

S.No	Blood Glucose Value	Mean	Standard Deviation	t' Value	Level of significant
1.	Pre test	153.16	16.62	0.915	0.05
2.	Post test	148.92	16.15		

Table 3 shows that in the control group the pre test mean blood sugar value was 153.16,post test mean blood sugar value was 148.92 .The `t` value obtained was 0.915 at 24 degree of freedom and 0.05 level of significant.

Table 4 Comparison of Post test value of blood glucose value among experimental & control group

S.No	Blood Glucose Value	Mean	Standard Deviation	t' Value	Level of Significant
1.	Experimental group	149.96	26.46	0.0612	0.05
2.	Control group	148.92	16.15		

Table 4 shows that in the experimental group the post test mean blood glucose value was 149.96 and in the control group the post test blood glucose value was 148.92. The calculated `t` value obtained was 0.0612 at 48 degree of freedom and significant at 0.05 level. It implies that aerobic exercise is one among an intervention in reducing the blood sugar value among diabetes.

Table 5 Comparison of pre & post test value of Knowledge on Practice among Experimental and control Group

S.no	Item	Mean	Standard Deviation	t Value	Level of Significance	
1	Experimental Group	Pre test	11.4	1.52	8.742 *	0.05
		Post Test	15.08	1.46		
2	Control Group	Pre test	11.04	1.66	1.523	0.05
		Post Test	11.68	1.32		

Table 5 shows that the pre test and post test value of knowledge on practice of experimental group score was 11.4 &15.08 .The calculated `t` value was 8.742 and in control group pre test and post test value of knowledge on practice score was 11.04 &11.68 .The calculated `t` value was 1.523 at 0.05 level of significant.

Table 6 Comparison of Post test value of Knowledge on Practice among experimental & control group

S.No	Blood Glucose Value	Mean	Standard Deviation	t' Value	Level of Significant
1.	Experimental group	15.08	1.46	0.392	0.05
2.	Control group	11.68	1.32		

Table 6 shows that in the experimental group the post test mean value was 15.08 and in the control group the post test mean value was 11.68. The calculated 't' value obtained was 0.392 at 48 degree of freedom and significant at 0.05 level. It implies that VAT regarding aerobic exercise has a significant effect on knowledge on practice among diabetes

Table 6 Association of Selected Demographic Variables with the post test score of the blood sugar value of Experimental Group of Diabetes

S. No	Demographic Variables	Above Mean	Below Mean	Degree of freedom	X ²
1	Age a. 25-30 years b. 31-35 years c. 36-40 years d.>41 years	4 1 4 3	4 3 4 2	3	1.354
2	Sex a. Male b. Female	5 6	8 6	1	0.336
3	Education a. primary school b. Secondary school c. Higher school d. Degree	2 2 4 7	0 4 3 3	3	2.1213
4	Occupation a. Unemployed b. Self employed c. Labour d. Government employed	3 4 2 3	2 6 1 4	3	1.0366
5	Monthly income a. Rs 1000-5000 b. Rs5001-10,000 c. 10,001-15,000 d. 15,001 and above	3 5 0 3	1 7 2 4	3	3.176
6	Family History of illness a. Present b. Absent	4 7	4 10	1	0.1714
7	Duration of illness a. 1-3 months b. 4-6 Months c. 7-9 Months d. 10-12 Months	3 2 4 2	3 5 4 2	3	1.0965

Demographic Variables like age , sex, education ,occupation , monthly income ,family history of illness ,duration of illness showed no significant association with the post test score of blood value among experimental group.

IV. Conclusion:

The present study results shows the effectiveness of video assisted teaching regarding aerobic exercise in reduction of blood glucose level among diabetes.

V. Recommendation

- The comparative study can be done for the type 1 diabetes and type 2 diabetes regarding aerobic exercise .
- A similar study can be done in public health center.

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Conflict of Interest : None

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