

EFFECT OF RESISTANCE EXERCISES VERSUS AEROBIC EXERCISES ON QUALITY OF LIFE IN PATIENTS WITH DIABETES MELLITUS USING PDQS QUESTIONNAIRE

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ABSTRACT

The aim of this study was to study the effect of resistance exercises versus aerobic exercises on quality of life in patients with Diabetes Mellitus using PDQS Questionnaire. The required sample size was 24 Adding 20% losses to follow up the effective sample size n=30. Therefore, total 60 subjects are recruited and equally allocated (n=30) to 2 groups. The study showed that there is significant difference in PDQS score resistance exercise training than aerobic exercise training. Hence the study concludes that with the increased prevalence of diabetes in India and around the world, it is becoming even more important to assess the quality of life as an outcome measure in long term illness and management. Quality of life is considered as a critical outcome of disease treatment and control.

KEYWORDS: Diabetes mellitus, Quality of life, PDQS Questionnaire, Aerobic exercises, Resistance exercises.

INTRODUCTION

Diabetes Mellitus is the most common endocrine disease, it is a metabolic syndrome characterized by hyperglycemia due to absolute or relative insulin deficiency and resistance both.^[1] Diabetes Mellitus is a chronic metabolic non communicable disease.^[1] More than 95% of all adults with DM have type II Diabetes Mellitus.^[1] India is one of the epicentres of the Global DM epidemic and has the second highest no. of people with the disease in the world.^[2] World Health Organization defined health as not only by the absence of disease and infirmity, but also by the presence of physical, mental and social well being.^[3] There has been a burgeoning interest in quality of life issues, and specially in health- related quality of life, fuelled by several factors, including a growing body of evidence concerning the potent effect of psychosocial factors on physical health outcome.^[3] People with diabetes mellitus often feel challenged by their disease and its day-to-day management demands.^[3] Diabetes therapy, such as taking insulin, can substantially affect quality of life either positively, by reducing symptoms of high blood sugar, or negatively by increasing symptoms of low blood sugar.^[3]

METHODOLOGY

Type of study: A randomized controlled trial

Study setting: A Tertiary care hospital

Target population: Type 2 DM

Sample size: 60 {30 each group}

Duration of study: 18 month

Equipment and Materials

- PDQS Questionnaire
- Pen
- Paper

Selection Criteria**Inclusion Criteria**

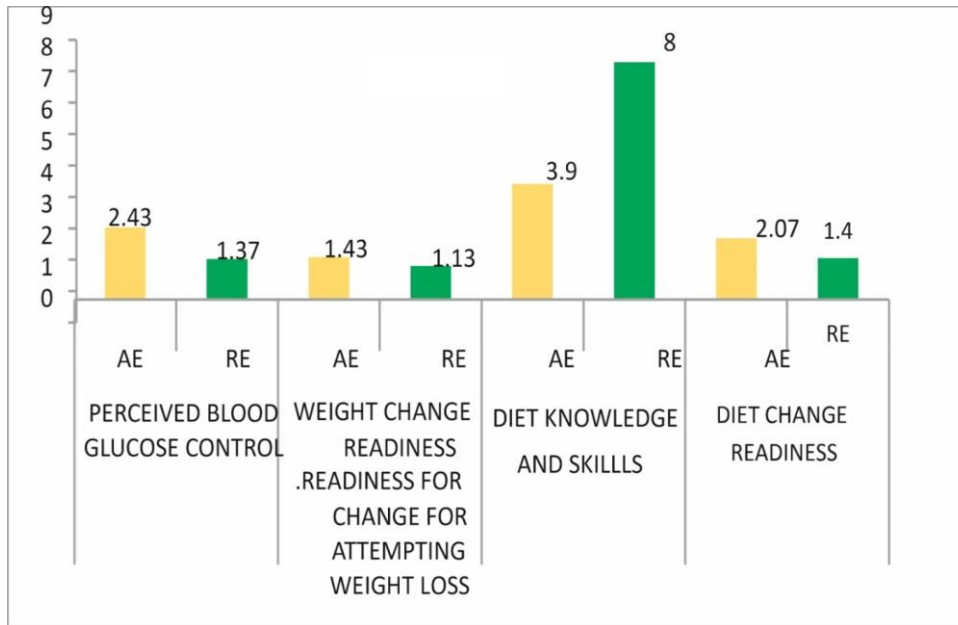
- 1) Sedentary patients with type 2 diabetes > 1 year
- 2) Both genders
- 3) Age: 30-60 years
- 4) All the patients were screened and stress testing was done under diabetologist supervision.
- 5) Blood glucose levels –
 - a. Fasting blood glucose 126 mg/dl or greater
 - b. Post prandial 200 mg/dl or greater
- 6) Rate of perceived exertion was considered using Modified Borg rating scale of 0-10 (4 which is somewhat hard)
- 7) Sedentary, defined as reporting never having participated in a structured exercise program or recreational physical activities or sport.

Exclusion Criteria

- 1) Smoking
- 2) History of Coronary Artery Disease
- 3) Renal Impairment or Proteinuria
- 4) Hepatic Impairment
- 5) Gout or Hyperuricaemia
- 6) Uncontrolled Hypertension (Systolic Blood Pressure More Than 160 Mm Hg)
- 7) Diabetic Neuropathy
- 8) Retinopathy
- 9) Any Complaint Secondary To Diabetes Mellitus

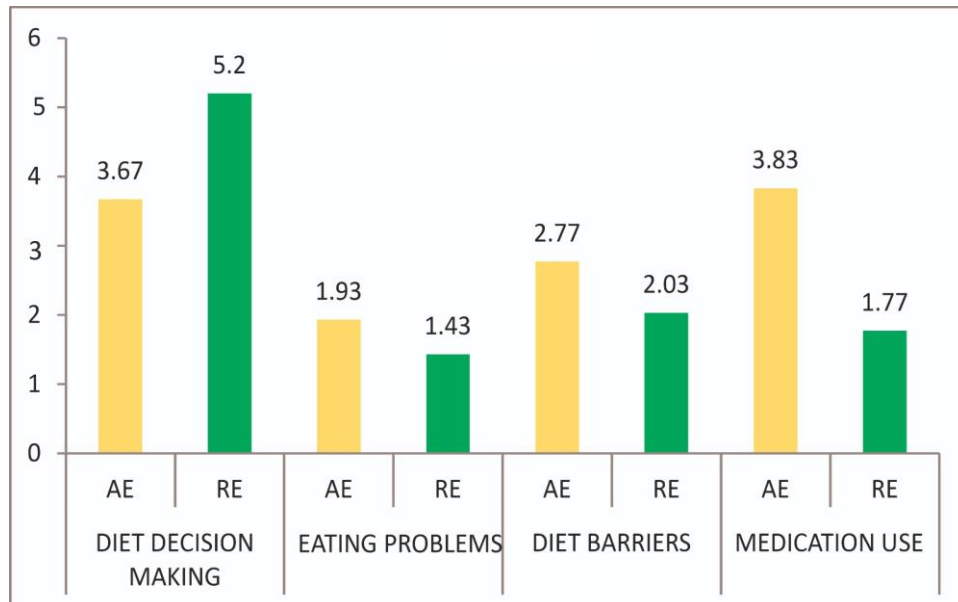
Graphical Representation

Quality of life comparison of aerobic exercises versus resistance exercises using PDQS questionnaire.



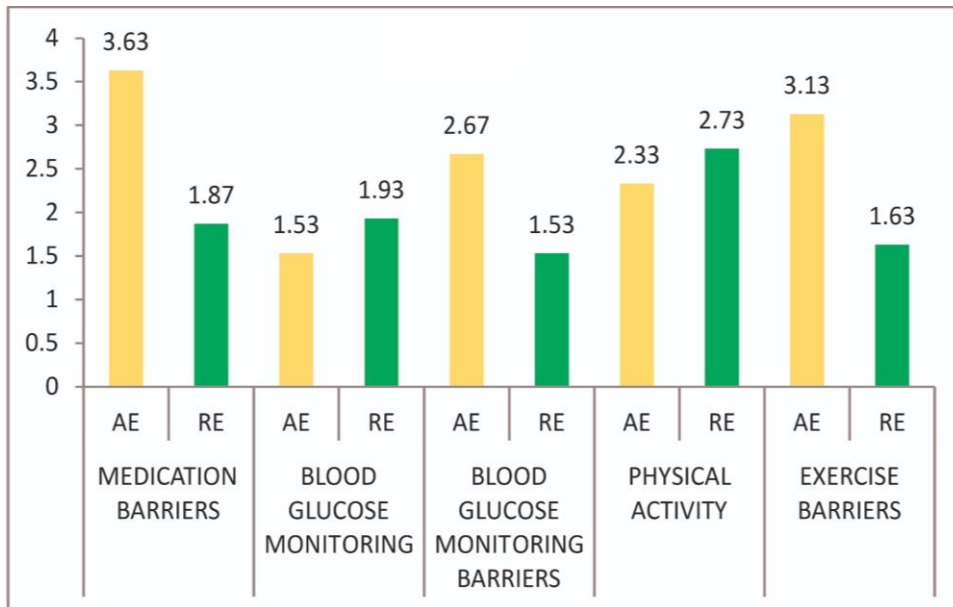
Graph 1: Difference of AE Vs RE on 3rd month.

PDQS values for perceived blood glucose control for aerobic is 2.34 and for resistant is 1.37. PDQS values for weight change readiness for aerobic is 1.43 and for resistant is 1.13. PDQS values for diet knowledge for aerobic is 3.9 and for resistant is 8. PDQS values for diet change for aerobic is 2.07 and for resistant is 1.4.



Graph 2: Difference of AE Vs RE on 3rd month.

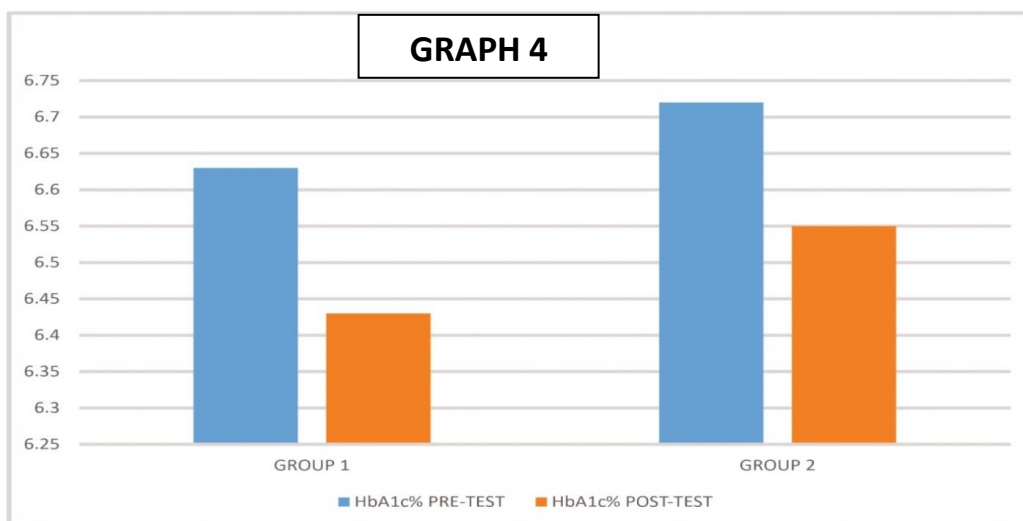
PDQS scoring value of diet barriers is 2.77 for aerobic exercises and 2.03 for resistant exercises. PDQS scoring value of medication use is 3.83 for aerobic exercises and 1.77 for resistant exercises.



Graph 3: Difference of AE Vs RE on 3rd month.

PDQS scoring value of medication use is 3.83 for aerobic exercises and 1.77 for resistant exercises which shows that medication doses are missed more frequently in aerobic exercises compared to resistant exercises. PDQS scoring value of blood glucose monitoring is 1.53 for aerobic exercises and 1.93 for resistant exercises. PDQS scoring value of blood glucose monitoring barrier is 2.67 for aerobic exercises and 1.53 for resistant exercises. PDQS scoring value of physical activity is 2.33 for aerobic exercises and 2.73 for resistant exercises. PDQS scoring value of exercise barriers is 3.13 for aerobic exercises and 1.63 for resistant exercises.

HbA1c comparison in Resistance exercises [Group 1] Aerobic exercises [Group 2]



Graph 4 shows the HbA1c comparison between pre and post values for the aerobic and resistance exercise group.

RESULTS

Thus, the above result shows that resistance exercise training program and aerobic exercise training program both are effective in improving Quality of life in patients with diabetes mellitus but resistance exercise training program is more effective in improving Quality of life than aerobic exercise training program.

DISCUSSION

In this study out of 60 subjects the gender distribution of females is 32% and male is 68%. The age wise distribution of the participants varies in different age groups ranging from 45 years of age to 69 years of age group. (Graph 1). According to this study graph 2 which indicates that aerobic exercises have less adherence to diet compared to resistant exercises. Also, the effect of medication can be seen in Graph 2 i.e medication doses are missed more frequently in aerobic exercises compared to resistant exercises. Graph 3 indicates that blood glucose monitoring and adherence to it had been improved in resistant exercises compared to aerobic exercises. The value of blood glucose monitoring barrier for resistant exercises shows better adherence to blood glucose monitoring and less blood glucose monitoring barrier compared to aerobic exercises. This shows that resistant exercises has better adherence to exercise regimen when compared to aerobic exercises. Also, it has been noticed that improved physical activity is seen in resistant exercises when it has been compared to aerobic exercises (Graph 3). A study done by Nicholas F. Sculthorpe found that Resistance training (RT) has been shown to increase muscle strength and aerobic capacity in older people and to improve glycaemic control in people with T2DM. Few randomized controlled trials have investigated the effects of RT on muscle function, cardio metabolic risks, physical performance, and quality of life with the focus on older adults (mean age ≥ 60 years) with T2DM. The findings, in most of the studies, showed that RT could significantly improve the muscle strength of older adults with T2DM. In a study by Yang-qin Xun has shown that regular aerobic exercise can increase insulin sensitivity, which improves the adverse lipid profile. It has been shown that resistance exercise can benefit all adults and patients with T2DM by improving physical function, fat mass, lipid profiles, cardiovascular health, blood pressure, and insulin sensitivity. In another study by SHERI R. COLBERG was done where the effects of aerobic exercise and resistance training on the quality of life of patients with diabetes were evaluated, it was shown that exercise improved quality of life in many ways, regardless of the type of exercise. In That study, resistance exercise created a significant improvement in physical functioning, role---physical, general health, vitality and Physical Components Summary (PCS), and aerobic exercise caused a significant improvement in physical functioning, bodily pain, general health, vitality, and PCS. The contribution of moderate and high intensity aerobic exercise to glucose homeostasis, cardiovascular diseases and especially quality of life has been shown in numerous studies.

CONCLUSION

With the increased prevalence of diabetes in India and around the world, it is becoming even more important to assess the quality of life as an outcome measure in long term illness and management. Quality of life is considered as a critical outcome of disease treatment and control. Quality of life is an important parameter in diabetes treatment modality. Poorer quality of life in women than men was reported.

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