



EFFECTS OF EXERCISE INTERVENTIONS ON IMPROVEMENT IN COGNITIVE FUNCTIONALITY OF BANGLADESHI DIABETIC INDIVIDUALS

FARIA SULTANA ^{1*}, SOUMENDRA SAHA ² AND SRILEKHA SAHA ³

¹Faculty of Arts & Social Sciences, Department of Economics, American International University-Bangladesh (AIUB)
^{2&3}College of Arts and Sciences, International University of Business Agriculture and Technology (IUBAT), Dhaka, Bangladesh
 ORCID ID <https://orcid.org/0000-0001-9134-4893>



OPEN ACCESS

First Review by: Asso Prof. Dr. Santanu Dutta
 Second Review by: Dr. Md Faruque Reza
 Final Review by: Asso Prof Dr Anish Mukherji



DR. FARIA SULTANA

Faculty of Arts & Social Sciences,
 Department of Economics,
 American International
 University-Bangladesh (AIUB)-Dhaka,
 Bangladesh

COMPETING INTERESTS:

Conflict of interest declared none

Received: March 20th 2021

Accepted: August 27th 2021

Published: October 30th 2021

Citation:

Sultana, F; Saha, S and Saha, S (2021).
 Effects of Exercise Interventions on
 Improvement in Cognitive Functionality of
 Bangladeshi Diabetic Individuals
 International Journal of Life Science and
 Pharma Research. SECTION II – Research
 on Health Science Topics. Special Issue: MS-
 BD50-Res-Exp. Health Sc-1, P 1 -5.

<http://dx.doi.org/10.22376/ijlpr/SP15/Oct/2021.1-25/S>

KEYWORDS:

Type 2 Diabetes Mellitus, Aerobic exercise,
 Combined exercise, Cognitive Functionality,
 Bangladesh

ABSTRACT

Background: T2DM individuals are mostly evident as vulnerable to cognitive dysfunction, which perhaps lead to cognitive impairment associated with visual motor disorientation.

Aim: This study aims to assess the impacts of aerobic and combined exercises in cognitive functionality of the T2DM participants in Dhaka, Bangladesh.

Method: 66 middle-aged T2DM individuals residing in Dhaka, Bangladesh was included in the study. In this research Bender-Gestalt II test was used for the evaluation of comprehension and working memory status of T2DM population. There was 14 weeks of intervention sessions along with another 14 weeks of no intervention session to evaluate the sustainability of the intervention programs carried out with a control and two differential exercise intervention groups. Two-way repeated measure of ANOVA was used to analyse the data.

Results: There were statistically significant differences observed in pre-to post intervention phase ($p = .000$) and pre-to follow up phase ($p = .000$) in participants with negative mean differences relating to higher value in post and follow up phase respectively in comprehension and working memory score of visual motor abilities in both aerobic and combined exercise intervention programs.

Conclusions: It can be concluded that participants in the aerobic and combined exercise intervention have shown improvement in overall improvement in comprehension and working memory status of T2DM individuals in Dhaka, Bangladesh. However, no group wise difference was evident among the participants.

1. INTRODUCTION

Diabetes has been considered as one of the most common metabolic disorders all over the world¹. The existing literature has demonstrated that diabetes imposes a large and ever-increasing burden on people. Moreover, with the rapid pace of urbanization, drastic changes in lifestyles have triggered the chances of increasing the risk factors for non-communicable diseases such as Type 2 diabetes mellitus (T2DM)¹. This changing phenomenon has been observed throughout the world but especially in the developing countries where the impact of diabetes falls both on individuals and their families to the entire communities and nations². Diabetes-related misery – emotional distress linked to the problems of living with diabetes and its management – is quite common among adults with T2DM³. Diabetes suffering includes burdens of the rigorous self-management routine, emotional suffering, uncertainties about glycemic control, and frustration over not receiving adequate support from close ones and providers for handling diabetes⁴.

The occurrence of depression is considerably higher among people with type 2 diabetes than among those without diabetes, and that prevalence among females with diabetes is higher than among males⁵.

There is both cross-sectional⁶ and longitudinal evidence that depression is associated with poor glycemic control. A systematic review also found evidence of the association of depression with treatment non-adherence⁷ while another found an association with poor dietary control⁸. There is also evidence of the association of depression with less physical activity and diabetes self-care activities⁹. A meta-analysis found comorbid depression to be associated with greater diabetes complications, including diabetic retinopathy, nephropathy, neuropathy, microvascular complications, and sexual dysfunction¹⁰. Evidence also exists of an association of depression with coronary heart disease in women¹¹. In addition, comorbid depression is associated with a higher risk of disability and decreased work productivity as well as a significant deterioration in quality of life¹².