

Effect of Blood Sugar Levels on Short Term and Working Memory Status in Type 2 Diabetics

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Abstract : Background: The increase in diabetes among the elderly is of concern because in addition to the wide range of traditional diabetes complications, evidence has been growing that diabetes is associated with increased risk of cognitive decline. Aims and Objectives: To find out if there is any association between blood sugar levels and short-term and working memory status in patients of type 2 diabetes. Materials and Methods: The study was carried out in 200 individuals aged between 40-65 years consisting of 100 diagnosed cases of Type 2 Diabetes Mellitus and 100 non-diabetics from OPD of Mc Gann Hospital, Shivamogga. Rye's Auditory Verbal Learning Test, Verbal Fluency Test and Visual Reproduction Test, Working Digit Span Test and Validation Span Test were used to assess short-term and working memory. Fasting and Post Prandial blood sugar levels were estimated. Statistical analysis was done using SPSS 21. Results: Memory test scores of type 2 diabetics were significantly reduced ($p < 0.001$) when compared to the memory scores of age and gender matched non-diabetics. Fasting blood sugar levels were found to have a negative correlation with memory scores for all 5 tests: AVLT ($r=-0.837$), VFT ($r=-0.888$), VRT($r=-0.787$), WDST ($r=-0.795$) and VST ($r=-0.943$). Post- Prandial blood sugar levels were found to have a negative correlation with memory scores for all 5 tests: AVLT ($r=-0.922$), VFT ($r=-0.848$), VRT($r=-0.707$),WDST ($r=-0.729$) and VST ($r=-0.880$) Memory scores in all 5 tests were found to be negatively correlated with the FBS and PPBS levels in diabetic patients ($p < 0.001$). Conclusion: The decreased memory status in diabetic patients may be due to many factors like hyperglycemia, vascular disease, insulin resistance, amyloid deposition and also some of the factor combine to produce additive effects like, type of diabetes, co-morbidities, age of onset, duration of the disease and type of therapy. These observed effects of blood sugar levels of diabetics on memory status are of potential clinical importance because even mild cognitive impairment could interfere with today's activities.

Keywords : diabetes, cognition, diabetes, HRV, respiratory medicine

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