Diabetes mellitus is a group of metabolic disorders characterized by elevation of blood glucose concentration and is associated with increased prevalence of microvascular complications. Type 2 diabetes mellitus is the most common form of diabetes accounting for \( \frac{4}{5} \) of cases. The complications of diabetes include diabetic retinopathy, nephropathy and neuropathy. Sialic acid is a component of cell membranes and elevated levels may indicate excessive cell membrane damage, but more specifically to the cells of vascular tissue. If there is damage to vascular tissue, this leads to ischemia which is most visible in the smallest blood vessels, including those of the retina of the eyes, kidneys, heart and brain. It is this ischemia that leads to conditions including but not limited to retinopathy, nephropathy and neuropathy. In addition, sialic acid can be used as a measurement of the acute-phase response because many of the proteins of the immune response are actually glycoproteins and these glycoproteins have sialic acid the terminal sugar on their oligosaccharide chain.

The purpose of this study was mainly to determine the relationship between total serum sialic acid and occurrence and progression of diabetic retinopathy (DR). Also, the study tried to find if sialic acid was concerned with diabetic nephropathy in Type 2 diabetic patients with retinopathy (non-proliferative and proliferative) who were matched with 10 diabetic patients without retinopathy and 10 healthy controls. The study showed statistical significant increase in total serum sialic acid in all diabetic patients but the increase was more prominent in patients with proliferative DR. There were increase in fasting glucose level, glycosylated HB%, total cholesterol, triglycerides, LDL-C, serum urea, serum creatinine and urinary albumin/creatinine ratio with decrease in HDL-C in diabetic retinopathy patients (mainly with proliferative retinopathy), the increase was statistically significant. This increase in these parameters was parallel to this increase in total serum sialic acid but not reach to significant correlation.

The statistically significant correlation was found between total serum sialic acid and both age of the patients and duration of diabetes.