5.1. Discussion

The incidence of diabetes mellitus and its complications is markedly increasing in Sudan as well as in the different part of the world according to the WHO and researches took place in Sudan (WHO,1999).

The present study was carried out in order to estimate the link between gamma glutamyl transferase in diabetic patients and lipid profile by analyzing serum cholesterol and triglycerides , and to compare the results obtained by analyzing samples with apparently healthy individuals.

The data and results obtained by applying the statistical comparison of P.value of serum gamma glutamyl transferase, cholesterol and triglycerides in the two groups, using T.test and Pearson Correlation test. The T test showed that, P.value of gamma glutamyl transferase was 0.029 indicating the significant increase in type 2 DM than control. This finding is in accordance with previous studies (Koro et al.,2004),. Previous study done by Andre et al., (2005) on patients with type 2 diabetes after a three year follow-up period had showed that raised gamma GT was correlated with the central obesity, increased fasting glucose, Triglycerides, and blood pressure in both sexes. In another study when results of GGT, FPG, and Triglycerides were compared (Lippi et al.,2007) the concentrations of FPG and triglycerides markedly increased among the higher GGT categories. Similarly, the frequency of FPG and hypertriglyceridemia increased steadily with levels of GGT. Our results suggest that GGT are closely associated with the risk of metabolic syndrome and type 2 diabetes and that among these enzymes serum GGT is the most powerful risk indicator for developing the metabolic syndrome and type 2 diabetes one explanation for our findings is that the elevation of liver enzymes could be expression of excess deposition of fat in liver, which is regarded as a feature of the insulin resistance syndrome (Malnick et al.,2003 ; Marchesini , Forlani,2002).

Association between serum GGT and risk for diabetes has recently demonstrated that a raised serum GGT is an independent risk factor for the development of type 2 DM. (Perry et al.,1998).

The results also showed that the P.value of serum cholesterol was 0.502 ,indicating no significant increase between study and control groups. Also showed that the P.value of serum triglycerides was 0.006, indicating the significant increase between study and control groups.

According to the Pearsons correlation test there is no significant correlation between GGT and cholesterol p.value 0.125 but there is correlation between GGT and Triglycerides p.value 0.013 and correlation between cholesterol and triglycerides p. value 0.011 . There was no correlation between GGT and BMI (p.value = 0.332) , FBS (P.value = 0.187). There agreement with a previous study (Khan,Kodliwadmath,2015) .reported triglycerides (r=0.91, p= 0.02) correlated positively with GGT .Rajarajeswari D et al (Rajarajeswari et al.,2014). Positive association between serum GGT and triglycerides (r = 0.112), serum GGT and cholesterol(r=0.027) were observed. In the current study, it was found that Triglycerides was positively correlated with GGT, but cholesterol was not significantly correlated with GGT. which was similar to the results of the study by Rajarajeswari D et al.

5.2. conclusion

The data suggested that from the results of the study we concludes that The present study concludes that, DM patients had increase GGT and triglycerides, while no difference observed in total cholesterol. GGT positivily associated with triglycerides, no association noted with cholesterol and BMI.

5.3. Recommendations

• To establish cohort study to obtain new result , to predict cardiovascular disease among diabetic patients and to predict diabetes in first class relative of diabetes mellitus patients .

• To measure C- reactive protein instead of lipid profile with gamma glutamyl transferase among diabetic patients .