Op 5: Impact of obesity on glucose and lipid profile among adults in Jaffna District

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Introduction: Obesity is rapidly becoming one of the most important medical and public health problems. Obesity increases the risk of developing cardiovascular diseases and diabetes.

Objectives: Aims of this study were to describe correlation between Body Mass Index (BMI) with fasting plasma glucose (FPG) and lipid profile and to describe correlation between waist circumferences (WC), hip circumferences (HC), and waist hip circumferences (WHR) with FPG and lipid profile among adults in Jaffna District.

Methods: This was a community based cross sectional descriptive study among adults (above 18 years) in Jaffna District. Body weight, height, WC, and HC were taken in standardized methods. FPG, High Density Lipoprotein (HDL), Triglycerides (TG) and total cholesterol were analyzed by the enzymatic colorimetric assay (Hitachi 704 Clinical chemistry analyzer/Roche diagnostics). Ethical clearance was obtained from the Ethical Review Committee, Faculty of Medicine, University of Jaffna. Written consent was obtained from each participant.

The TG, HDL cholesterol levels and FPG levels were considered abnormal based on International diabetic federation definition and underweight, overweight and obesity were classified based on WHO classification for Asians (2006).

Results: Five hundred and eleven adults were selected for this study. Forty four percentages (224) of the samples were males. Hundred and twenty four subjects (24%) were overweight and among them 59% (73) were females. Twenty eight subjects (5.5%) were obese and among them 64% (18) were females. With the increase in BMI, the subjects had the risk of developing impaired fasting glucose ($R^2 = 0.930$) and DM ($R^2 = 0.998$). There was positive linear relationship between BMI and raised TG level ($R^2 = 0.804$). Overall, there were correlation between WC, HC, WHR with FPG in both males and females ($P < 0.05$). Age had correlation with TG ($P = 0.008$) and LDL ($P < 0.001$) while BMI had correlation with TC ($P < 0.001$). Among the underweight subjects, the BMI had correlation with TG in males ($P = 0.037$) while WHR had correlation with LDL ($P = 0.038$) of males and with FPG of females ($P < 0.001$). Among the normal subjects, FPG had correlation with age ($P = 0.002$) and WC ($P = 0.022$) of males whereas TG had correlation with BMI ($P = 0.001$) and FPG ($P = 0.001$) of females. Among the overweight subjects, FPG had correlation with WC of males ($P = 0.035$) and WHR of females ($P = 0.014$). TG had correlated with WC ($P = 0.018$) and WHR ($P = 0.013$) of overweight males while with the FPG ($P = 0.012$) of overweight females. Among the obese females BMI had correlation with FPG ($P = 0.016$), and WHR had correlation with TG ($P = 0.02$).

Conclusion: Subjects with increased BMI had the risk of developing IFG and DM. A positive linear relationship between BMI and raised TG level was obtained while age had correlation with TG and LDL.