Insulin resistance and pancreatic β cell mass as the potential predictors of diabetes mellitus among adolescents of economically challenged rural communities in Sabah

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ABSTRACT

Insulin resistance is associated with components of metabolic syndrome. It can be detected many years prior to the development of diabetes, hypertension, dyslipidemia and athersclerosis in adult life. The transition period from adolescence to adult life is an important period where the modification of life style to reduce insulin resistance can be effectively performed to reduce the future morbidity and mortality related to insulin resistance. There are no previous study regarding the status of insulin resistance and pancreatic β cell mass in adolescents of economically challanged rural communities in Sabah. In this study adolescents from the villages in Sabah who gave informed consent were included and their body mass index, waist cicumference, hip circumference, waist hip ratio and blood pressure were examined. Fasting serum insulin and plasma glucose level were determined and insulin resistance and percentage of β cell mass were assessed by using the Homeostasis assessment model (HOMA-IR and HOMA –β cell mass). We investigated the relationships between fasting insulin level, fasting blood sugar, BMI, waist circumference, WHR, HOMA IR and HOMA β cell mass in our study. Insulin resistance (HOMA –IR) was found in 3% of study population and 5.7% of female study population. Female gendre had the higher risk of insulin resistance compared to male population. It was found that insulin resistance had postive association with waist hip ratio. In thi sstudy, pancreatic β cell function ranged from 7.78 to 252. The association between insulin resistance (HMA-IR) pancreatic β cell (HOMA-β) was not found in this study. This study provides valuable information on the status of insulin resistance, pancreatic β cell mass and their relationship with body mass index , blood pressure and blood sugar levels so that practice of healthy life style in thoses who showed abnormalities can be encouraged. This study provided the preliminary data for further research on insulin resisatance and metabolic syndrome.