

## **Prevalence of metabolic syndrome in type 2 diabetic patients: a comparative study using WHO, NCEP ATP III, IDF and Harmonized definitions**

### **Abstract**

To determine the prevalence of metabolic syndrome (MetS) in Malaysian type 2 diabetic patients using WHO, NCEP ATP III, IDF and the new Harmonized definitions, and the concordance between these definitions. This study involved 313 patients diagnosed with type 2 diabetes mellitus (T2DM) at two Malaysian tertiary hospitals. Socio-demographic data were assessed using a pre-tested interviewer-administered structured questionnaire. Anthropometric measurements were carried out according to standard protocols. Clinical and laboratory characteristics were examined. Kappa ( $k$ ) statistics were used for the agreement between the four MetS definitions. The overall prevalence rates of MetS (95% CI) were 95.8% (93.6-98.1), 96.1% (94.0-98.3), 84.8% (80.8-88.9) and 97.7% (96.1-99.4) according to the WHO, NCEP ATP III, IDF and the Harmonized definitions, respectively. The Kappa statistics demonstrated a slight to substantial agreement between the definitions ( $k = 0.179-0.875$ ,  $p < 0.001$ ), where the WHO criteria revealed the highest concordance with the NCEP ATP III definition ( $k = 0.875$ ,  $p < 0.001$ ). The WHO against NCEP ATP III criteria evinced the highest sensitivity (99.66%) whereas Harmonized criteria against all the other three definitions showed the highest specificity (100%) in identifying MetS. In conclusion, the new Harmonized criteria established the highest prevalence of MetS among the four definitions applied. There was a very good concordance between the WHO and NCEP ATP III criteria. The extremely high prevalence of MetS observed in type 2 diabetic patients indicates an impending pandemic of CVD risk in Malaysia. Aggressive treatment of MetS components is required to reduce cardiovascular risk in T2DM.

**Keyword:** Metabolic syndrome; Type 2 diabetes mellitus (T2DM); World health organization; WHO; Third report of the national cholesterol education expert panel on detection; Evaluation; Treatment of high blood cholesterol in adults; NCEP ATP III; International diabetes federation; IDF; Harmonized definition