

## Determinants of metabolic syndrome among Malaysian government employees

### ABSTRACT

**Introduction:** The metabolic syndrome comprises a collection of cardiovascular disease risks, which has been demonstrated to predict type 2 diabetes mellitus and cardiovascular disease. Metabolic syndrome is a crucial health concern in Malaysia, with a prevalence of about 42.5% in the general population based on the ‘Harmonized’ definition. The aim of this study was to ascertain the association between socioeconomic status among Malaysian government employees with metabolic syndrome, compared with those without metabolic syndrome. Furthermore, this study also aimed to ascertain the associated obesity indicators for metabolic syndrome among employees—explicitly body mass index, waist circumference, waist-to-hip ratio, body fat percentage, fat mass index, and waist-to-height ratio. **Methods:** This cross-sectional study was undertaken at government agencies in Putrajaya, Malaysia, via multi-stage random sampling. A total of 675 government employees were randomly sampled from a list of 3,173 government employees working in five government agencies under five geographical areas. Data on socioeconomic status, anthropometric, biochemical, and clinical assessments were collected. **Results:** Employees who were males had higher metabolic syndrome prevalence compared to their counterparts ( $p=0.019$ ). In addition, employees aged between 20 to younger than 30 years had lowest metabolic syndrome prevalence ( $p=0.002$ ). The risk of having metabolic syndrome was almost 10 times more likely in men with a waist-to-hip ratio of  $\geq 0.90$  compared to men with a waist-to-hip ratio of  $< 0.90$  ( $p < 0.001$ ). Women with a waist-to-hip ratio of  $\geq 0.85$  were approximately 33 times more likely to have metabolic syndrome as compared to women with waist-to-hip ratios of  $< 0.85$  ( $p < 0.001$ ). Men with a waist circumference of  $\geq 90$  cm were approximately twice as likely to have metabolic syndrome, compared to men with waist circumferences of  $< 90$  cm ( $p=0.030$ ). The risk of having metabolic syndrome was almost three times more likely in women with a waist circumference of  $\geq 80$  cm compared to women with waist circumferences of  $< 80$  cm ( $p < 0.001$ ). Furthermore, the risk of having metabolic syndrome was almost five times more likely in women with fat mass indexes in Quartile 4 ( $\geq 7.93$ ), compared to women with fat mass indexes in Quartile 1 ( $< 5.25$ ) [ $p < 0.001$ ]. On the other hand, men with waist-to-height ratios of  $< 0.445$  were 75% less likely to have metabolic syndrome as compared to men with waist-to-height ratios of  $\geq 0.625$  ( $p=0.020$ ). Women with waist-to-height ratios of 0.445 to  $< 0.525$  were 95% less likely to have metabolic syndrome as compared to women with waist-to-height ratios of  $\geq 0.625$  ( $p < 0.001$ ). In addition, women with waist-to-height ratios of 0.525 to  $< 0.625$  were 77% less likely to have metabolic syndrome as compared to women with waist-to-height ratios of  $\geq 0.625$  ( $p < 0.001$ ). **Conclusion:** Gender and age were associated with metabolic syndrome prevalence. Waist-to-hip ratio, waist circumference, and waist-to-height ratio seems to be the better obesity indicators to predict the presence of metabolic syndrome than body mass index and body fat percentage in both men and women

**Keyword:** Metabolic syndrome x; Government; Employees; Socioeconomic status; Risk