

Association of Metabolic Syndrome with Risk of Mortality among Malaysian Adults



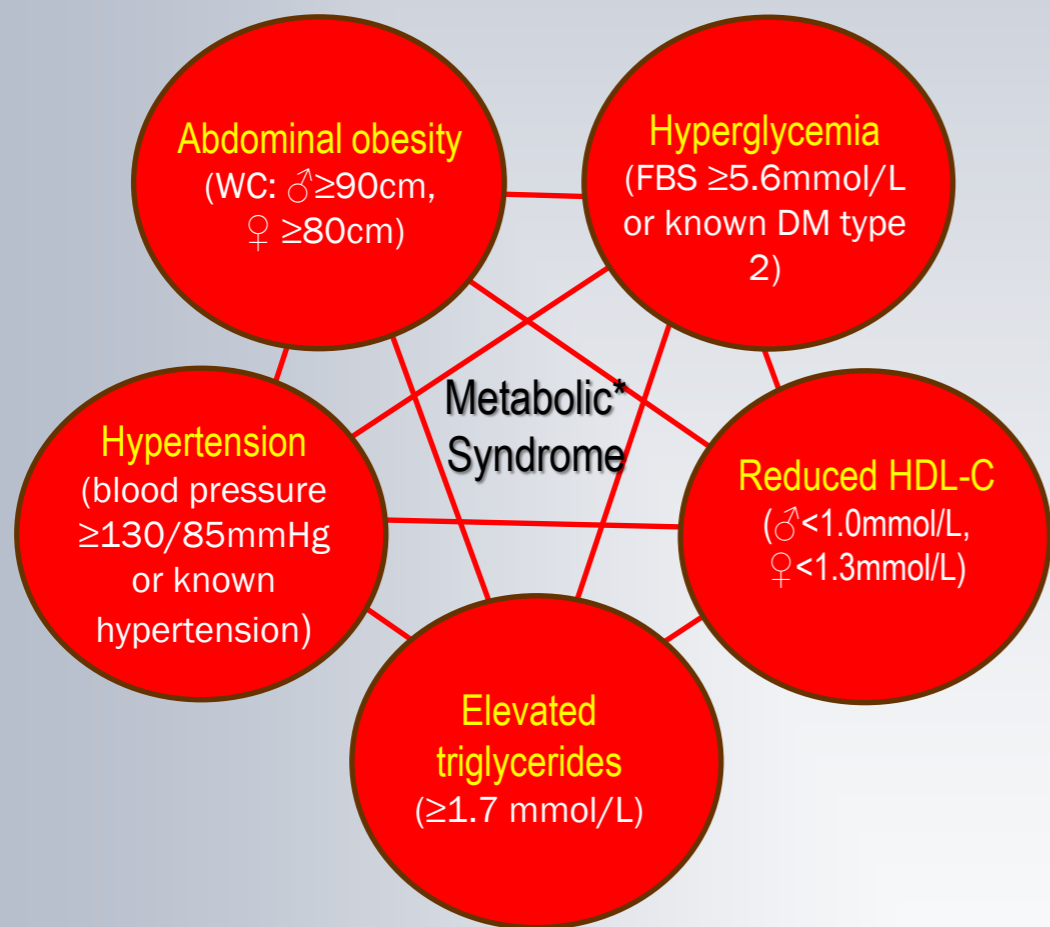
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Introduction

Definition of metabolic syndrome (MetS)



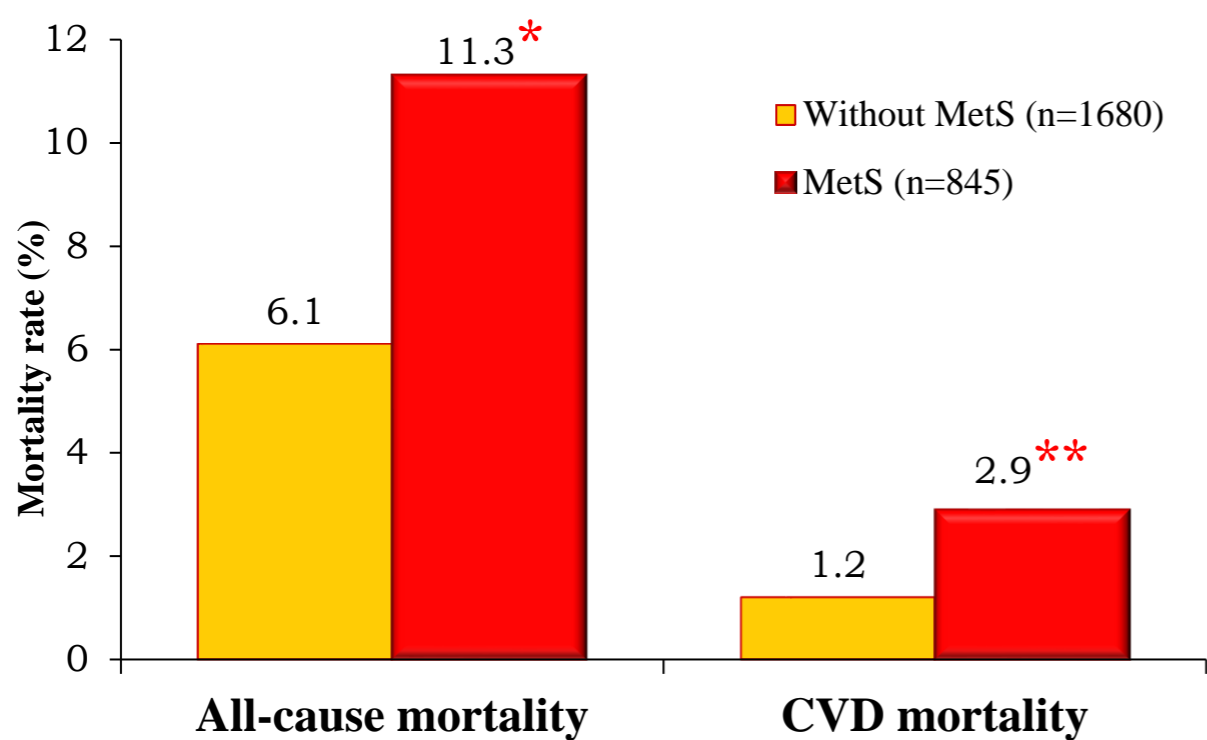
*Harmonised criteria [1]: presence of at least 3 risk factors

Previous studies have indicated that MetS is an independent risk factor for all-cause mortality and cardiovascular disease-related mortality[2].

In Malaysia, data on risk of mortality related to MetS remains unavailable. Therefore, we conducted a retrospective cohort study to assess the association between MetS and all-cause and cardiovascular disease (CVD) mortality among Malaysians.

RESULTS

Association between metabolic syndrome and mortality among Malaysian adult population (n=2525)



	Hazard ratio (95% CI) ⁴	p-value
All-cause mortality ¹	1.50 (1.03, 2.19)	0.036*
CVD mortality ²	2.15 (1.03, 4.53)	0.043**

¹ adjusted for gender, ethnicity, age, physical activity, smoking status dan alcohol consumption in the multiple cox-regression models

² adjusted for gender, age, smoking status dan alcohol consumption in the multiple cox-regression models

³ Based on Harmonized Criteria.

⁴ Complex sample multiple. Cox regression analysis was performed. 95% CI= 95% confidence interval. Test of proportional hazard was performed for all models showed p>0.05. No significant two-way interactions among all the independent variables

Materials and Methods

Study population

We analysed data from MyNCDS-1 2005/2006 [3]. MyNCDS-1 is a nationwide, population-based baseline survey on non-communicable diseases and its risk factors conducted in 2005-2006.

Baseline data

Baseline data extracted from the MyNCDS-1 2005/2006 survey were participants' sociodemographic characteristics (gender, ethnicity and age), lifestyle factors (physical activity, smoking status and alcohol consumption), anthropomorphic measurements (height, weight and waist circumference), blood pressure, and biochemical measurements (overnight fasting venous blood of lipid profile and glucose) [3].

Follow-up

Participants of MyNCDS-1 were followed-up for approximately 13 years from March 2006 to December 2018. Data on mortality during this period were obtained by matching the survey participants' identification number with records in the death registry administered by the National Registration Department of Malaysia.

All deaths from CVD coded as ICD-10 I00 to ICD-10 I99 according to the International Statistical Classification of Diseases and Related Health Problems, tenth revision (ICD-10)-version 2019 were classified as cardiovascular mortalities.

Data analyses

All statistical analyses were performed using IBM SPSS version 18.0 for Windows. The analyses took into account the complex survey design and unequal selection probabilities. Cox proportional-hazards regression model was applied to determine association between MetS and all-cause and CVD mortality adjusting for selected sociodemographic characteristics and health risk behaviours.

Discussion/Conclusions

Our data shows that presence of MetS was associated with 1.5 times risk of all-cause mortality and a 2-fold increase in risk of CVD mortality.

Therefore, lifestyle modification and pharmacological treatment approaches might improve the individual components forming MetS and thereby reduce mortalities associated with MetS.

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References

1. Alberti KGMM et al. Harmonizing the metabolic syndrome: A joint interim statement of the International Diabetes Federation task force on epidemiology and prevention; National Heart, Lung, and Blood Institute; American Heart Association; World Heart Federation; International Atherosclerosis Society; and International Association for the Study of Obesity. *Circulation* 2009; 120:1640-1645.
2. Mottillo S et al.. The metabolic syndrome and cardiovascular risk, a systematic review and meta-analysis. *J Am Coll Cardiol* 2010; 56(14): 1113-1132.
3. Disease Control Division (NCD). Malaysia NCD Surveillance 2006. NCD risk factors in Malaysia. Ministry of Health, Malaysia.