

# Comparison of paediatric metabolic syndrome (MS) between boys and girls aged 6.0-12.9 years old in Peninsular Malaysia

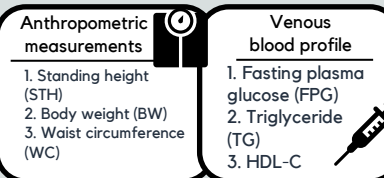


## INTRODUCTION

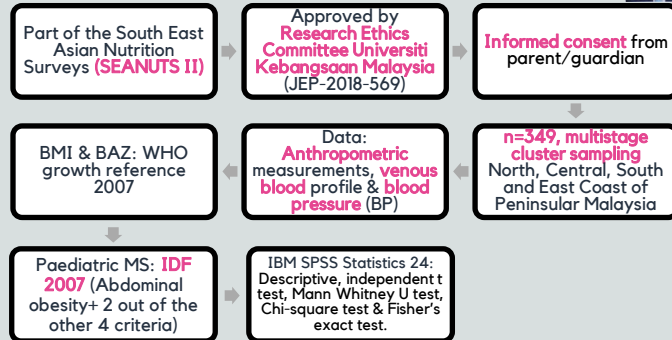
- ❖ **Metabolic syndrome (MS)** is defined as a cluster of **risk factors** contributing to the increased risk of **cardiovascular disease (CVD)**, including abdominal obesity, hyperglycaemia, dyslipidaemia and hypertension.
- ❖ **CVD** is the **leading cause of death** in Malaysia over the past few years (DOSM 2021).
- ❖ **Prevention** of CVD can be done via education and **risk monitoring through MS** since childhood.

## OBJECTIVE

This study aims to investigate the proportion of paediatric MS and its components between boys and girls aged 6.0-12.9 years old in Peninsular Malaysia.



## METHODOLOGY



Criteria of MS	IDF cut-off points (Zimmet et al. 2007)
Abdominal obesity (WC)	≥90 <sup>th</sup> percentile (Poh et al. 2011)
FPG	≥5.6 mmol/L
TG	≥1.7 mmol/L
HDL-C	<1.03 mmol/L
BP	Systolic ≥130 mmHg or Diastolic ≥85 mmHg

## RESULTS

- ❖ MS: **1.4%**; only girls.
- ❖ Significant: **boys higher FPG; girls higher TG.**
- ❖ Boys had higher: WC, HDL-C, systolic & diastolic BP; proportion of thinness, overweight/obesity, impaired FPG, elevated BP
- ❖ Girls had higher: standing height & body weight; proportion of normal weight, abdominal obesity, elevated TG, lower HDL-C and MS

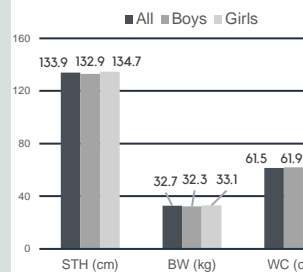


Figure 1: Mean anthropometric profile

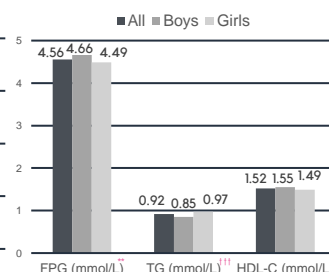


Figure 2: Mean venous blood profile

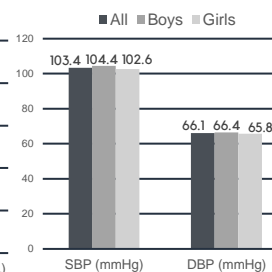


Figure 3: Mean blood pressure

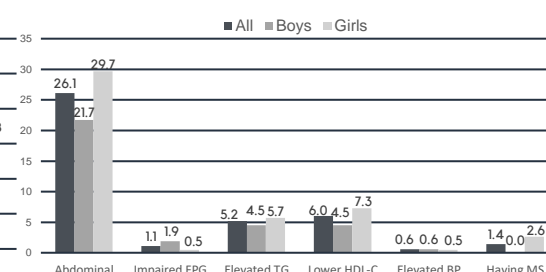


Figure 5: Proportion of MS and its criteria

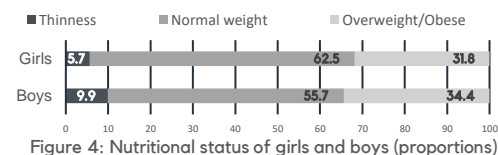


Figure 4: Nutritional status of girls and boys (proportions)

\*Significant differences were determined between sex using the Independent T-test at  $p < 0.01$ . \*\*Significant differences were determined between sex using the Mann-Whitney U test at  $p < 0.001$ .

## DISCUSSION

- ❖ Proportion of **paediatric MS** remains low compared to past study (Ghee & Kooi 2016).
- ❖ **Abdominal obesity, elevated TG and lower HDL-C** were the primary combination of paediatric MS.
- ❖ Paediatric MS is **not conducted in clinical settings** to monitor CVD risk.
- ❖ **Framingham Risk Score** is preferred over MS in monitoring CVD risk in **adults** but **limited** to age 30 and above (MOH 2017).

## CONCLUSION

- ❖ Proportion of **paediatric MS** was **low; boys: higher FPG, girls: higher TG.**
- ❖ **Continuous** metabolic score might be more **meaningful** than **dichotomous** MS classification in **monitoring**.
- ❖ **Novel anthropometric** measurements, such as waist-to-height ratio, body roundness index and others, with **high correlation to MS** might be more suitable for **mass screening** than venous blood test due to **easier access**.

## REFERENCES

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