Limitations of BMI in Characterising Obesity Phenotypes

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Introduction

BMI classifies obesity but does not account for body composition eg: muscle or fat distribution.

Objective

To compare adiposity and metabolic characteristics between participants with and without sarcopenic obesity phenotype (SOP).

Methodology

Population :

Participants with obesity undergoing metabolic surgery in Klang Valley.

Study Design :

Baseline analysis of a multicentre observational cohort.

Data Collection

Bioelectrical Impedance Analysis (BIA) for VFA, PBF, and SMM.

Defining SOP :

Obesity (BMI ≥ 27.5 kg/m²) + Low SMM [sex specific lowest quartile of SMM index (kg/m²)].

Statistical Analysis

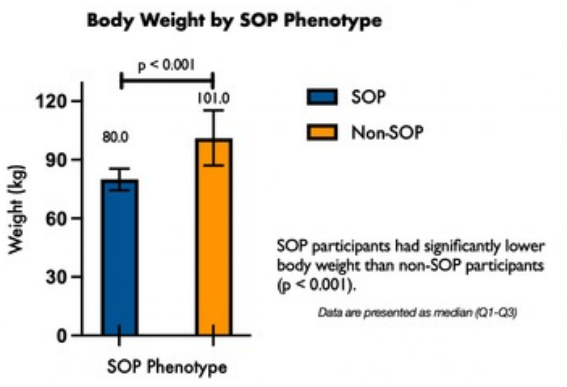
Mann–Whitney U test was used to compare continuous variables between SOP and non-SOP groups ($p < 0.05$ considered significant).

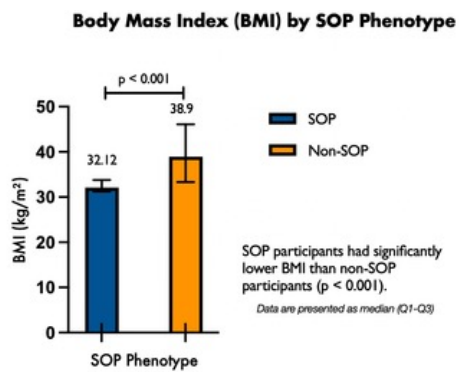
Results

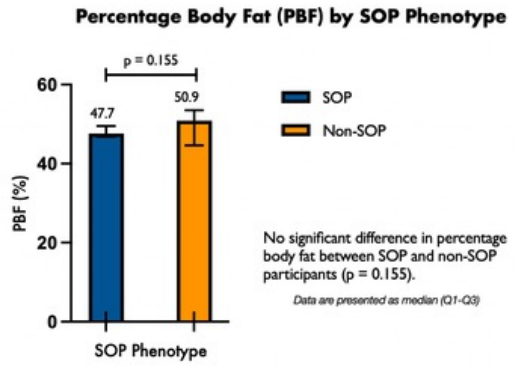
STUDY POPULATION

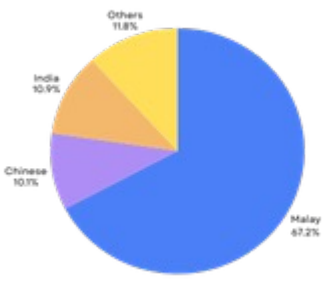
Women : (N = 72)
Mean Age: 39.6 ± 7.6 years

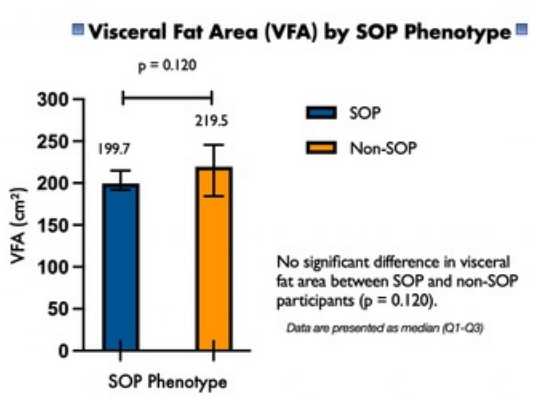
Non-SOP	SOP
N = 58	N = 14

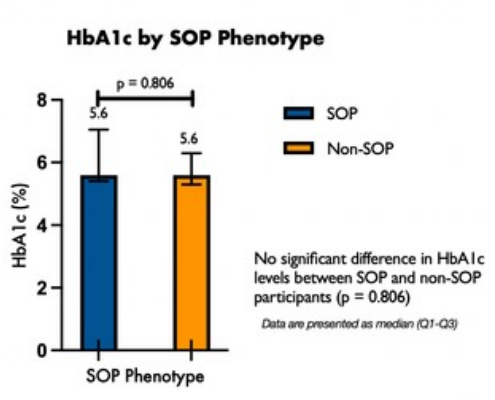












BMI alone may not adequately reflect adiposity or metabolic risk in individuals with sarcopenic obesity phenotype.

Discussion

- SOP participants had significantly lower body weight and BMI, despite having obesity.
- However, adiposity (VFA, PBF) and glycaemic level (HbA1c) remained comparable to the non-SOP group.
- BMI alone may mask clinically important differences in body composition.

Conclusion

- Women with SOP have smaller body sizes but equivalent adiposity and glycaemic risks to non-SOP women.
- This proves BMI is insufficient as a standalone indicator of obesity.
- Body composition analysis is essential to accurately identify metabolic risk in these individuals.

References

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