A SINGLE-CENTRE STUDY ON THE TRANSFORMATIVE IMPACT OF BARIATRIC SURGERY ON METABOLIC HEALTH IN MALAYSIA

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INTRODUCTION

- Metabolic diseases such as **obesity, type 2 diabetes, hypertension and dyslipidemia** contribute significantly to the global public health burden.
- While lifestyle modification and pharmacological therapy require sustained long-term effort, global evidence shows that **bariatric surgery leads to substantial improvements in obesity and other metabolic diseases** including type 2 diabetes, hypertension and dyslipidemia.
- However, most studies on this topic are based on Western populations and **limited research has been conducted in Southeast Asia** to evaluate the efficacy of bariatric procedures within the Malaysian context.
- This study intends to assess **the outcome of bariatric surgery in a single-centre Malaysian cohort** that will provide valuable data supporting bariatric surgery for obesity-related metabolic issues in Southeast Asia.

OBJECTIVES

- To assess **the impact of bariatric surgery on weight loss and metabolic disease control** including type 2 diabetes, hypertension and dyslipidemia.
- To evaluate the **trajectory of metabolic improvements over time** on weight loss, diabetes control, hypertension and dyslipidemia using longitudinal data collected at multiple postoperative intervals.
- To provide **regional evidence from a Malaysian cohort** on the effectiveness of bariatric surgery for managing obesity-related metabolic diseases in Southeast Asia.

METHODOLOGY

- **Design & Setting**
  Retrospective observational study conducted at Advanced Laparoscopy & Diabesity Surgical Centre, KPJ Damansara Specialist Hospital.

- **Study Population**
  116 patients who underwent bariatric surgery (2015–2025).

- **Inclusion Criteria**
  Metabolic syndrome defined by **≥3 NCEP ATP III** criteria:
  1. **Abdominal obesity** : Waist circumference
     > Men : 102 cm (40 inches)
     > Women : 88 cm (35 inches)
  2. **Elevated triglycerides** : Triglyceride levels of ≥ 1.7 mmol/L
  3. **Low HDL cholesterol** : HDL cholesterol levels
     < Men : 1.04 mmol/L
     < Women : 1.29 mmol/L
  4. **Hypertension** : Blood pressure readings of ≥ 130/ ≥ 85 mmHg
  5. **Elevated fasting blood glucose** : Fasting plasma glucose levels of ≥ 5.6 mmol/L

- **Data Collection**
  1. Metabolic parameters recorded pre-operatively and at 1, 3, 6, 9 and 12 months
  2. Parameters : Body weight, BMI, waist circumference, fasting glucose, HbA1c, blood pressure, TG, HDL and LDL.

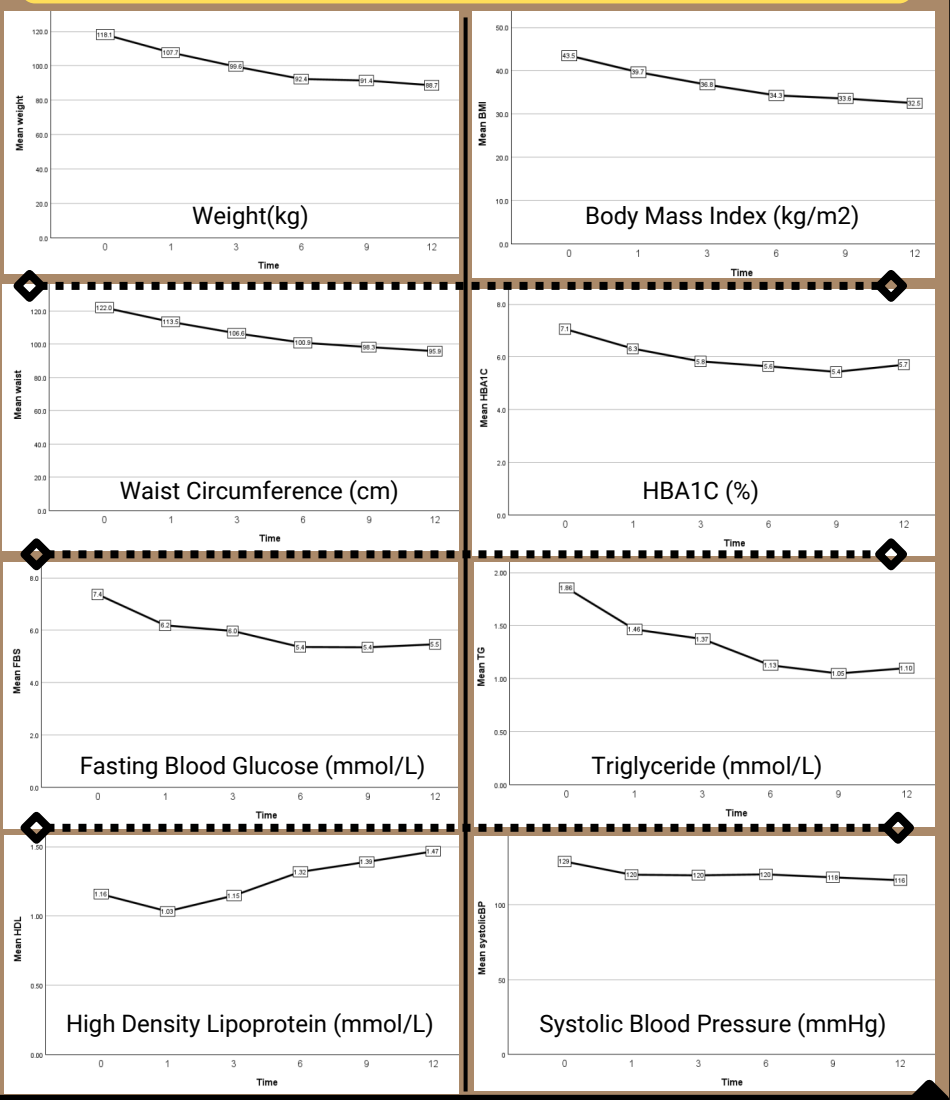
- **Statistical Analysis**
  Longitudinal changes analysed using mixed-effects repeated-measures models with post-hoc pairwise comparisons over 12 months.

RESULTS

The mean age of participants was 40.5 years with a mean baseline BMI of 43.49 kg/m² ; 58% were female. Over 12 months:

- **Mean body weight** declined from 118.12±29.17kg to 88.70±23.75kg (p<0.001)
- Reductions in **BMI** from 43.49±10.31kg/m² to 32.51±9.54kg/m² (p<0.001)
- **Waist circumference** from 122.02±19.05cm to 95.86±15.66cm (p<0.001)
- Glycaemic control improved with **HbA1c** decreasing from 7.05±1.55% to 5.70±1.38% (p<0.001)
- **Fasting blood glucose** declined from 7.37±2.54mmol/L to 5.46±1.69mmol/L (p<0.001)
- **Triglycerides** decreased from 1.85±0.85mmol/L to 1.09±0.52mmol/L (p<0.001)
- **HDL** cholesterol increased from 1.15±0.22mmol/L to 1.46±0.31mmol/L (p<0.001)
- **LDL** cholesterol showed no significant changes
- **Systolic blood pressure** declined from 128.99±13.59mmHg to 116.43±14.51mmHg (p=0.008)

Figure 1 : Longitudinal changes in weight and metabolic disease control following bariatric surgery based on mixed-effects repeated-measures (RM) analysis



DISCUSSIONS

- Bariatric surgery significantly **reduced body weight, BMI, waist circumference and improved glycaemic control, lipid profiles and systolic blood pressure** over 12 months.
- Findings are **consistent with Western studies** while highlighting differences in metabolic profiles among Southeast Asian patients.
- **Strength**: Longitudinal design with multiple follow-ups and standardized metabolic data contributing to limited Southeast Asian evidence.
- **Limitations**: Retrospective single-centre study, modest sample size, possible missing data and only 12-month follow-up.
- **Future research**: Larger prospective studies with longer follow-up and comparative analyses of different bariatric procedures within Southeast Asian populations.

CONCLUSIONS

- Bariatric surgery produced **significant weight loss and metabolic improvements** in this Malaysian cohort over 12 months.
- Significant improvements in glycaemic control, lipid profiles and blood pressure support bariatric surgery as an **effective metabolic intervention**.
- These findings provide **important Southeast Asian evidence** supporting bariatric surgery in the management of obesity-related metabolic diseases.

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