

Prevalence of micronutrient deficiencies in preoperative bariatric patients in a New Zealand tertiary centre

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Conflicts of interest

- Nil

Introduction

- Bariatric surgery → nutritional deficiencies
- B12, folate, iron deficiencies → anaemia
- Vitamin D deficiency → impair calcium, phosphate and bone metabolism

Introduction

- High prevalence of micronutrient deficiencies in bariatric patients preoperatively
- Important to correct deficiencies to prevent worsening deficiency postoperatively
- British Obesity and Metabolic Surgery Society
 - Recommend pre op testing of Hb, ferritin, folate, vitamin B12, vitamin D

Introduction

- Ethnic differences in vitamin D deficiency among preoperative bariatric patients
 - Nil studies in New Zealand
- Expensive tests
 - Vitamin D (\$31.10)
- May be a need to risk profile bariatric patients by ethnicity

Aims

- To assess prevalence of micronutrient deficiencies in preoperative bariatric patients in a NZ multi ethnic cohort
- To examine for ethnic differences

- Retrospective analysis of patients that underwent bariatric surgery at CMDHB
- Demographics/confounders
 - Age, gender, BMI, comorbidities, NZDep, supplementation status
- Preoperative levels of nutritional parameters
 - Albumin, calcium, phosphate, folate, vitamin B12, vitamin D, magnesium, haemoglobin, haematocrit, MCV, MCH, ferritin, iron, and transferrin

Methods – statistical analysis

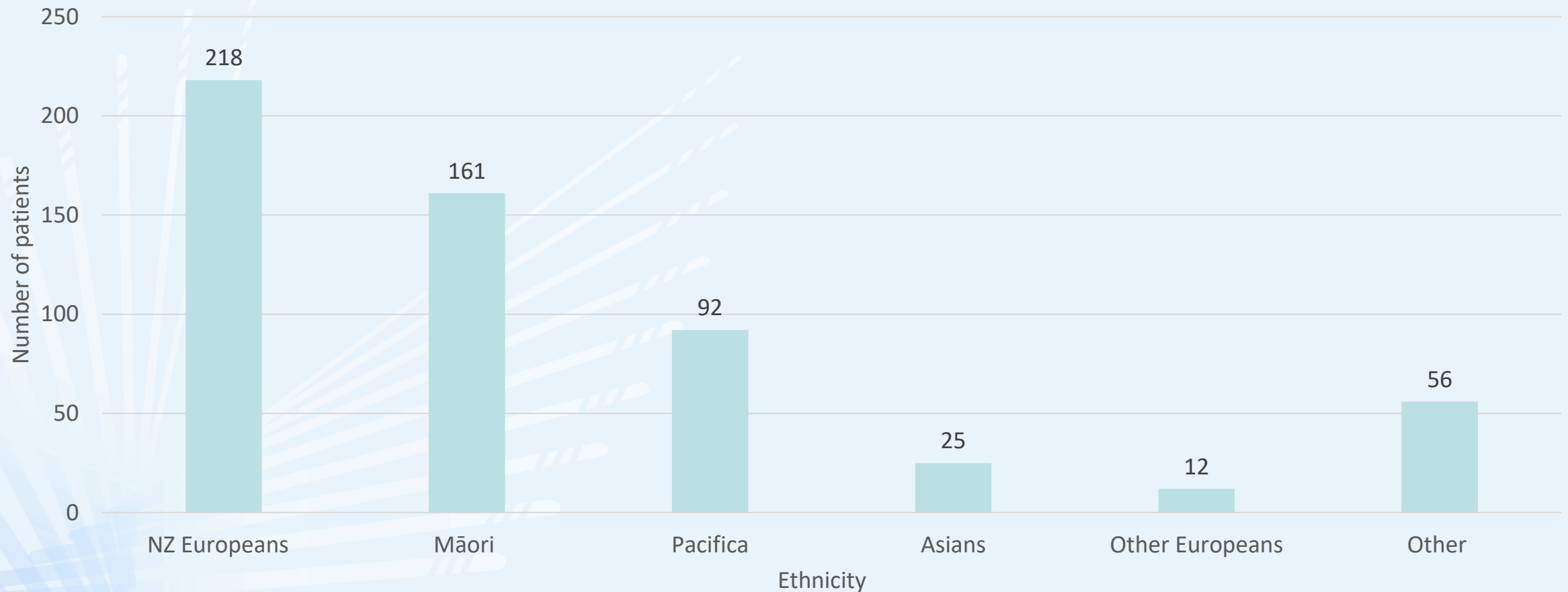
- Chi square and fisher exact tests
 - To assess for differences in prevalence of micronutrient deficiencies across ethnicities
- Multiple logistic regression model
 - Odds ratios and 95% CI
 - To assess for differences in prevalence of micronutrient deficiencies across ethnicities accounting for differences in age, BMI, gender and NZDep

Results – Patient Demographics

- 564 patients
- 70.39% female vs 29.61% male
- Mean age 44.95+/-9.92 years
- Mean pre operative BMI 46.74 +/- 7.31 kg/m²

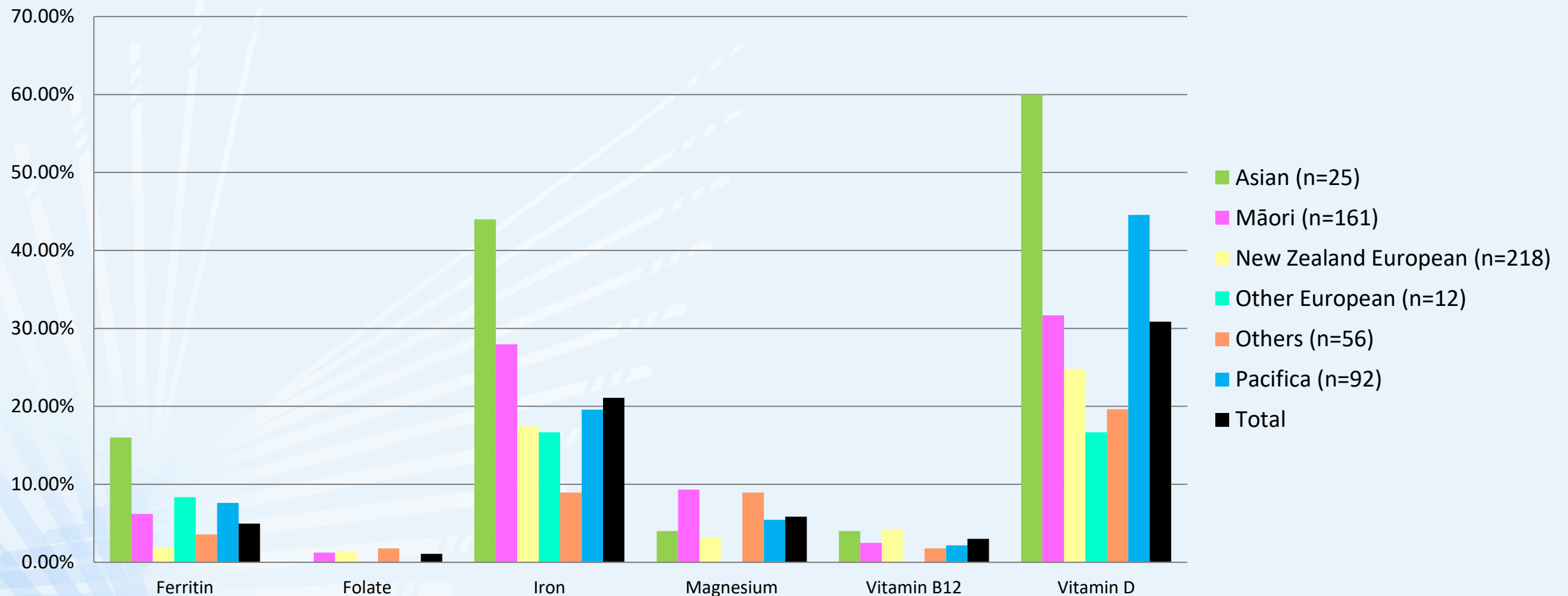
Results – Ethnic composition

Ethnic composition of cohort



Prevalence of micronutrient deficiencies

Prevalence of Micronutrients deficiencies across ethnicities

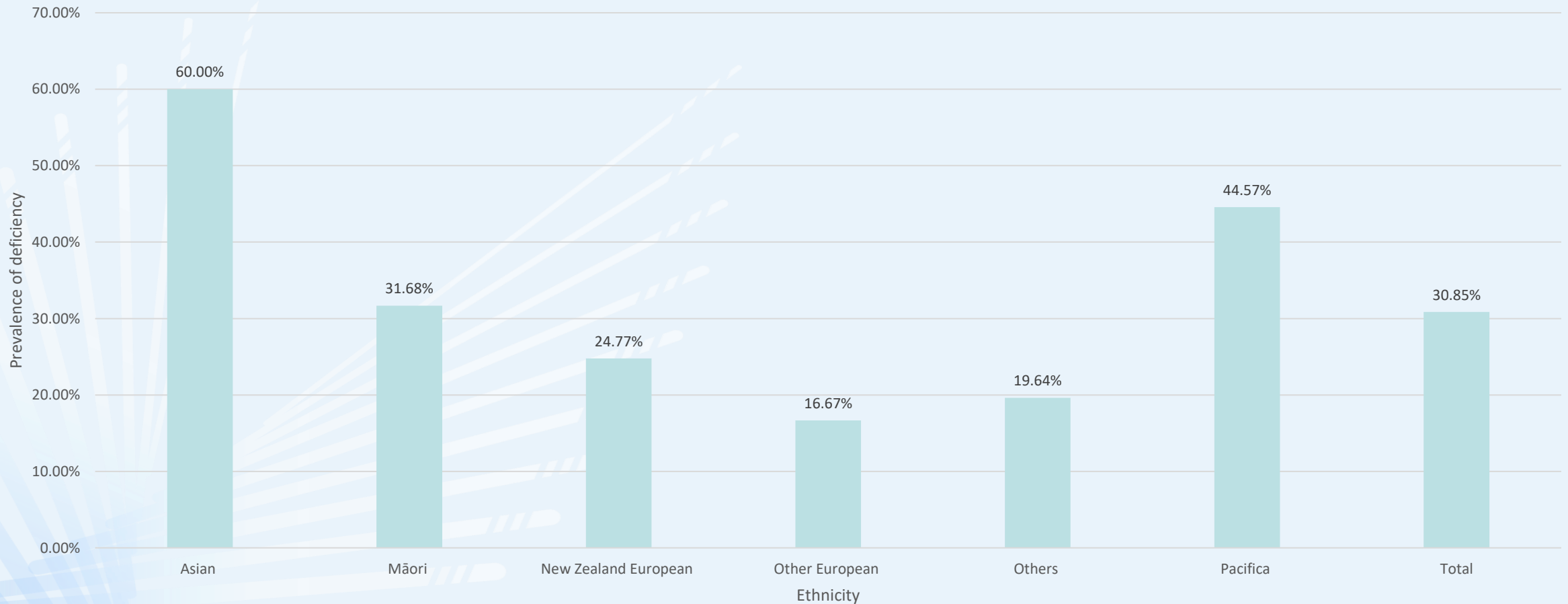


Results – Vitamin D

- The most common micronutrient deficiency was vitamin D (30.85%)
- Significant differences in vitamin D deficiency across ethnicities ($p < 0.0001$)

Prevalence of Vitamin D deficiency

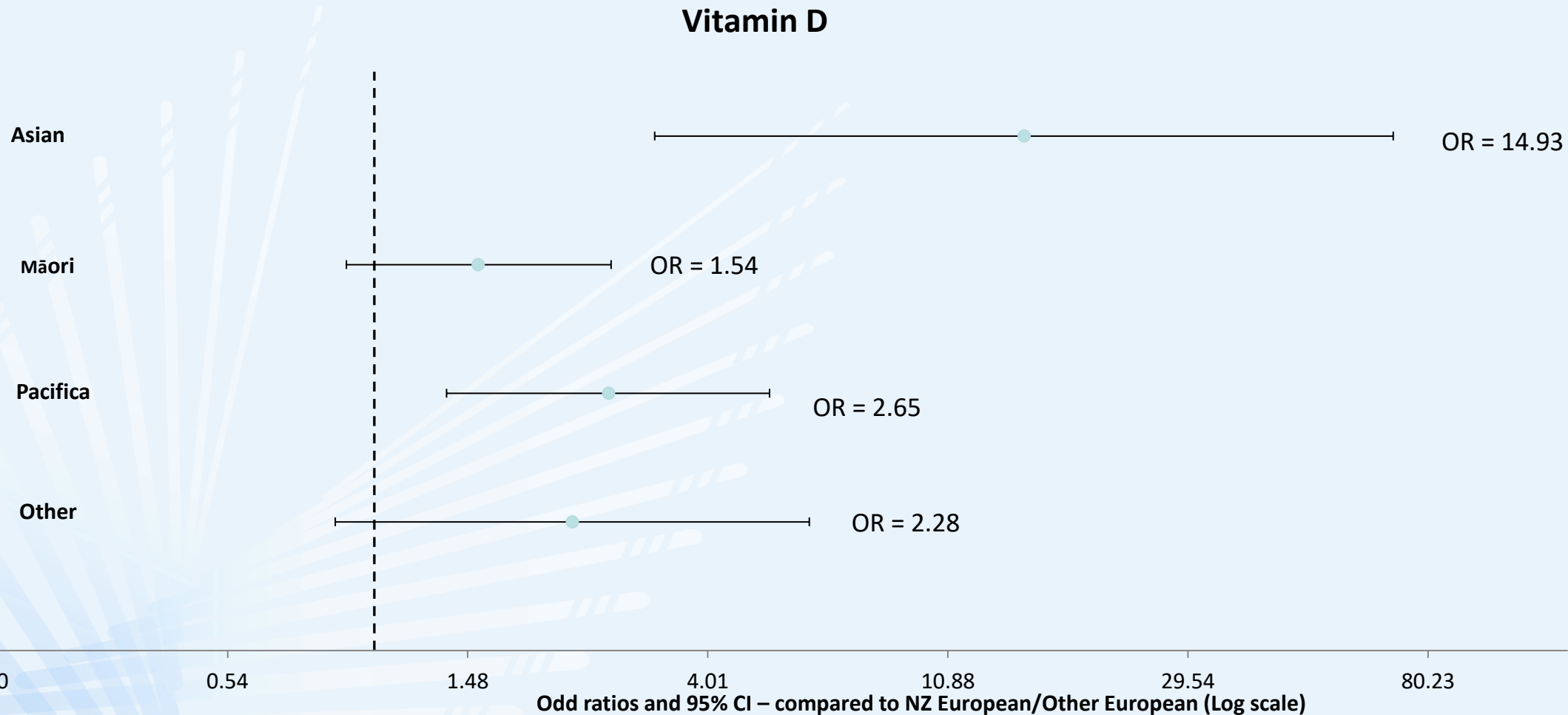
Prevalence of vitamin D deficiency across ethnicities



Prevalence of vitamin D deficiency

- When compared to Europeans, Asians and Pacifica were more likely to be vitamin D deficient ($p < 0.001$)

Prevalence of Vitamin D deficiency



Results – Vitamin D

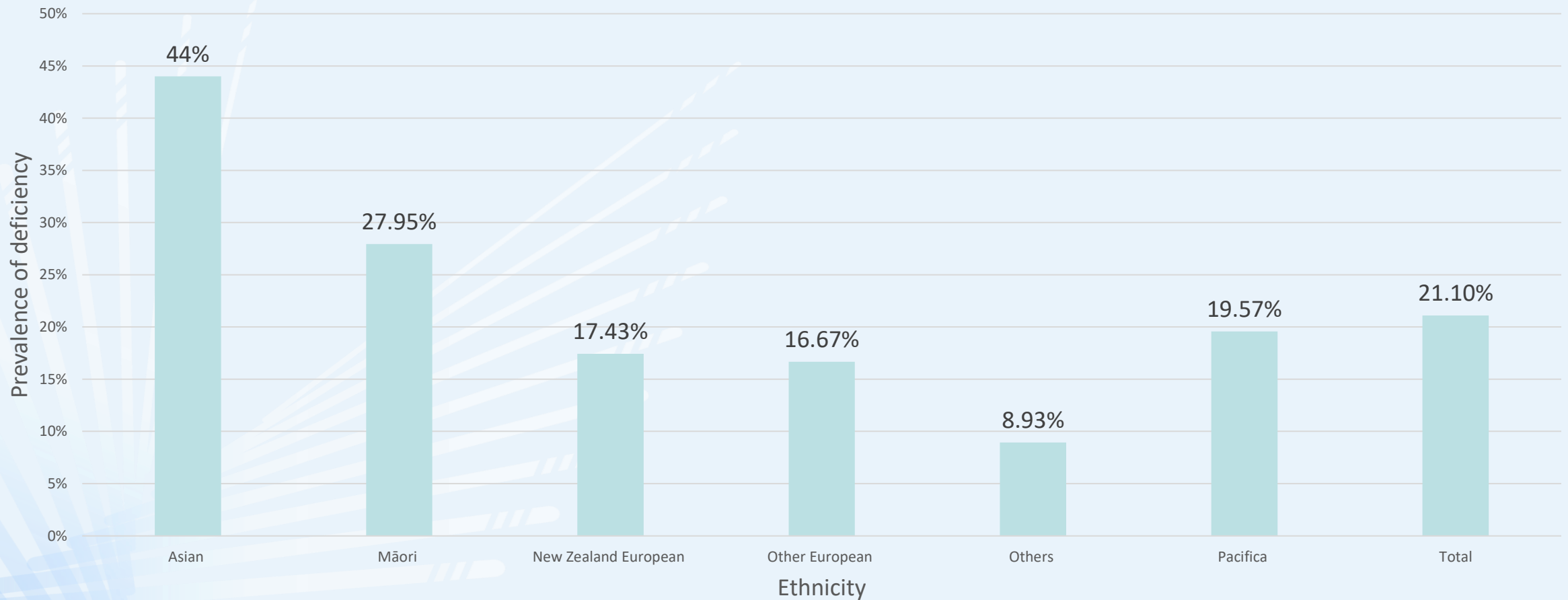
- Vitamin D deficiency was associated with higher BMI (OR =1.05, $p = 0.008$)

Results – Iron

- The second most common micronutrient deficiency was iron (21.1%)
- Significant differences in iron deficiency across ethnicities ($p = 0.0064$)

Prevalence of iron deficiency

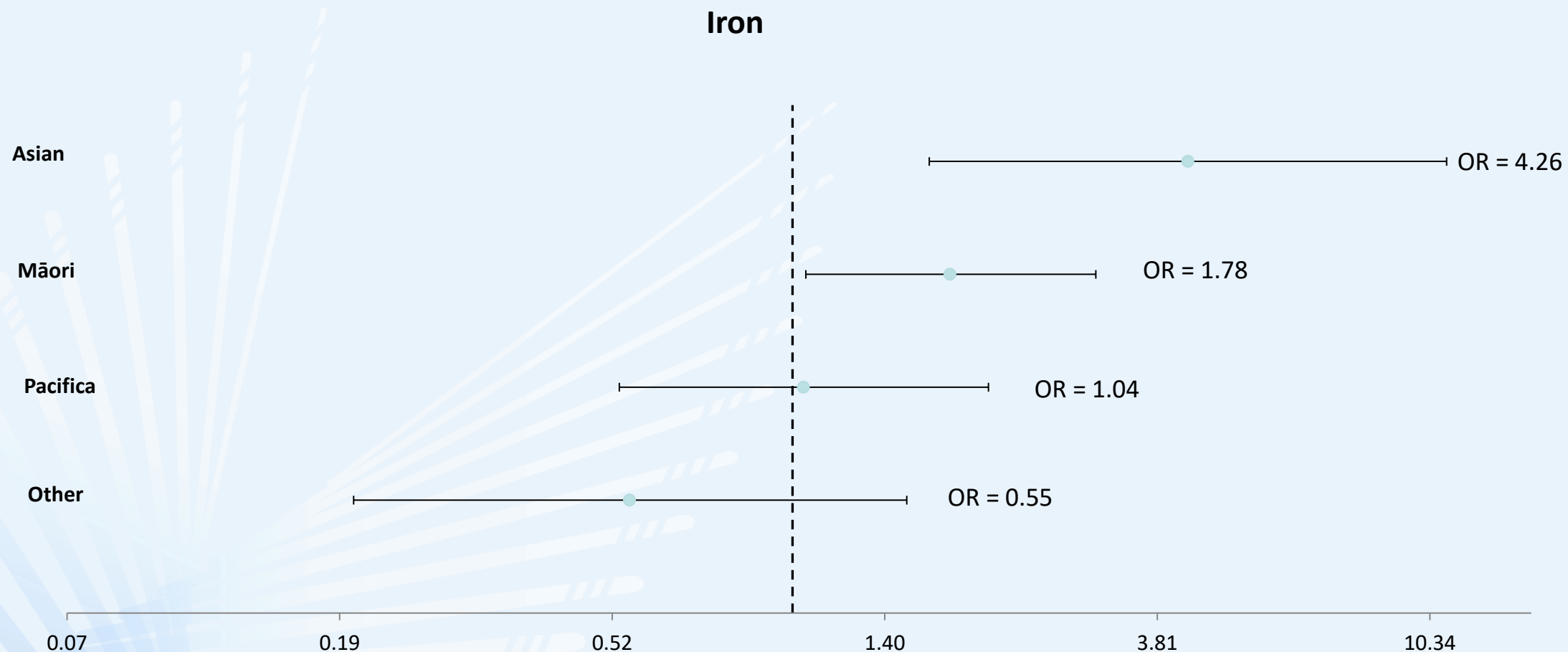
Prevalence of iron deficiency across ethnicities



Results – Iron

- When compared to Europeans, Asians and Māori were more likely to be iron deficient ($p=0.004$)

Prevalence of iron deficiency



Odd ratios and 95% CI – compared to NZ European/Other European (Log scale)

Results – Iron

- Female gender associated with iron deficiency (OR=2.12, $p = 0.007$)

Discussion – limitations

- Single centre study
- Small numbers of patients from each ethnic group
- Patients labelled with a single ethnic group
- Not all micronutrients assessed in all patients
- Factors impacting micronutrient status
 - Dietary intake
 - Over the counter supplements
 - Exposure to sunlight and skin colour

Discussion - implications

- Asians, Māori and Pacifica have greater burden of vitamin D deficiency compared to NZ Europeans
- Asians have the greatest burden of iron deficiency
- Expensive blood tests
- May be a role for preoperative treatment in these at risk groups without testing

Conclusion

- Vitamin D and iron are the most common micronutrient deficiencies among preoperative bariatric patients in this cohort
- Ethnic differences were seen
- Strategies for testing and treatment based on ethnicity may be justified

Questions

