MUCH ADO ABOUT COPPER AND ZINC -

AN AUSTRALIAN PERSPECTIVE

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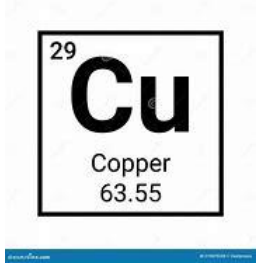
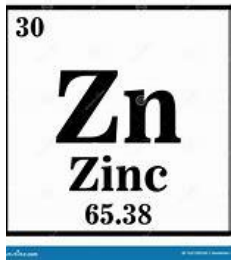
I have no potential conflict of interest to report



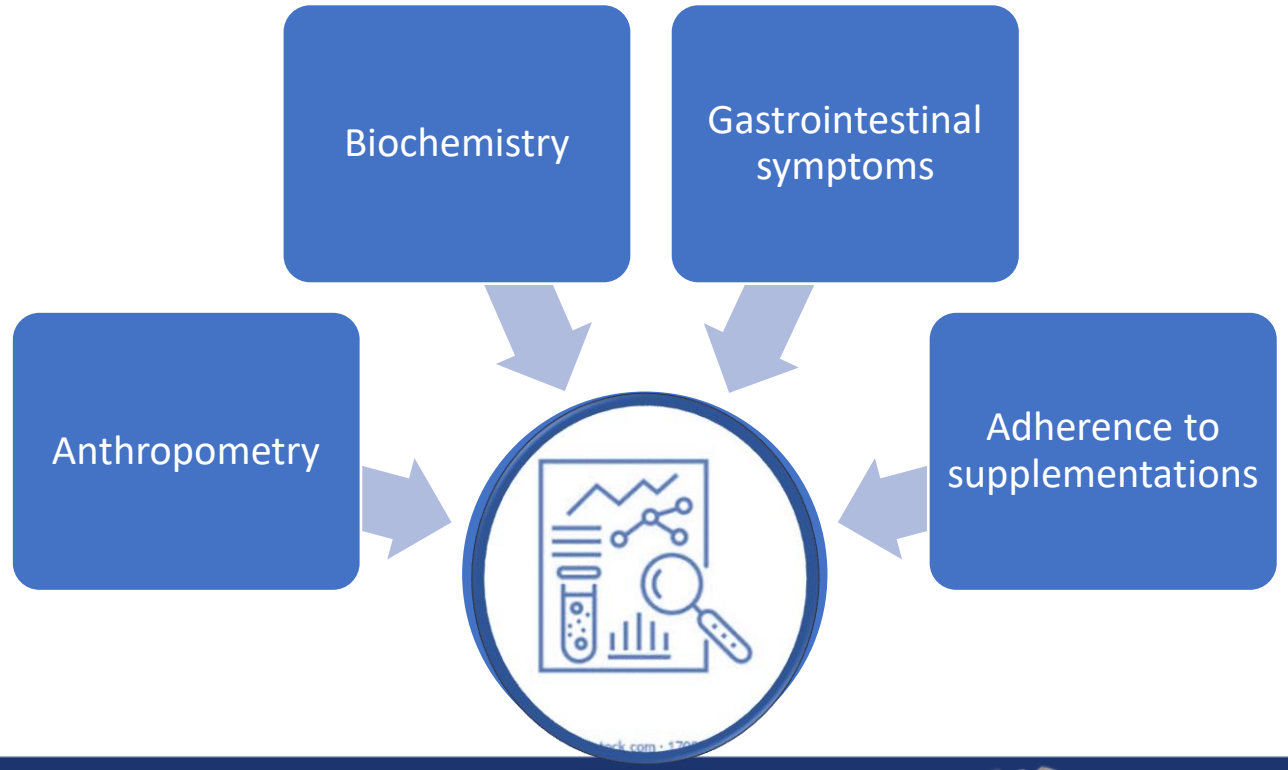
Introduction



- Nutritional deficiencies are a risk post Metabolic Bariatric surgery (MBS)
- Copper and Zinc deficiencies have been reported
  - Deficiencies may lead to severe complications
  - Cu: cardiac arrhythmias, myeloneuropathy, delayed wound healing microcytic anaemia, neutropenia, osteoporosis
  - Zn: alopecia, skin rash, growth retardation, delayed sexual development and bone maturation, impaired wound healing and immune function, diarrhea and blunting of taste and smell.
- Limited data on the Australian population

Aim

- Investigate abnormalities in Copper and Zinc
  - before and after bariatric surgery



Method

Electronic medical records
August 2020 - August 2021

Ethics

University of Wollongong
Human Research Ethics Committee

Clinic protocol:

- Pre-op, 2 weeks, 4 weeks, then 3 monthly in the first year

6 monthly from 2nd year post - op

- recommendation of multivitamin supplementation

Statistical analysis

- Descriptive statistics:
  - Mean ± standard deviation for continuous variables
  - Percentages for categorical data - deficiency or compliance rates

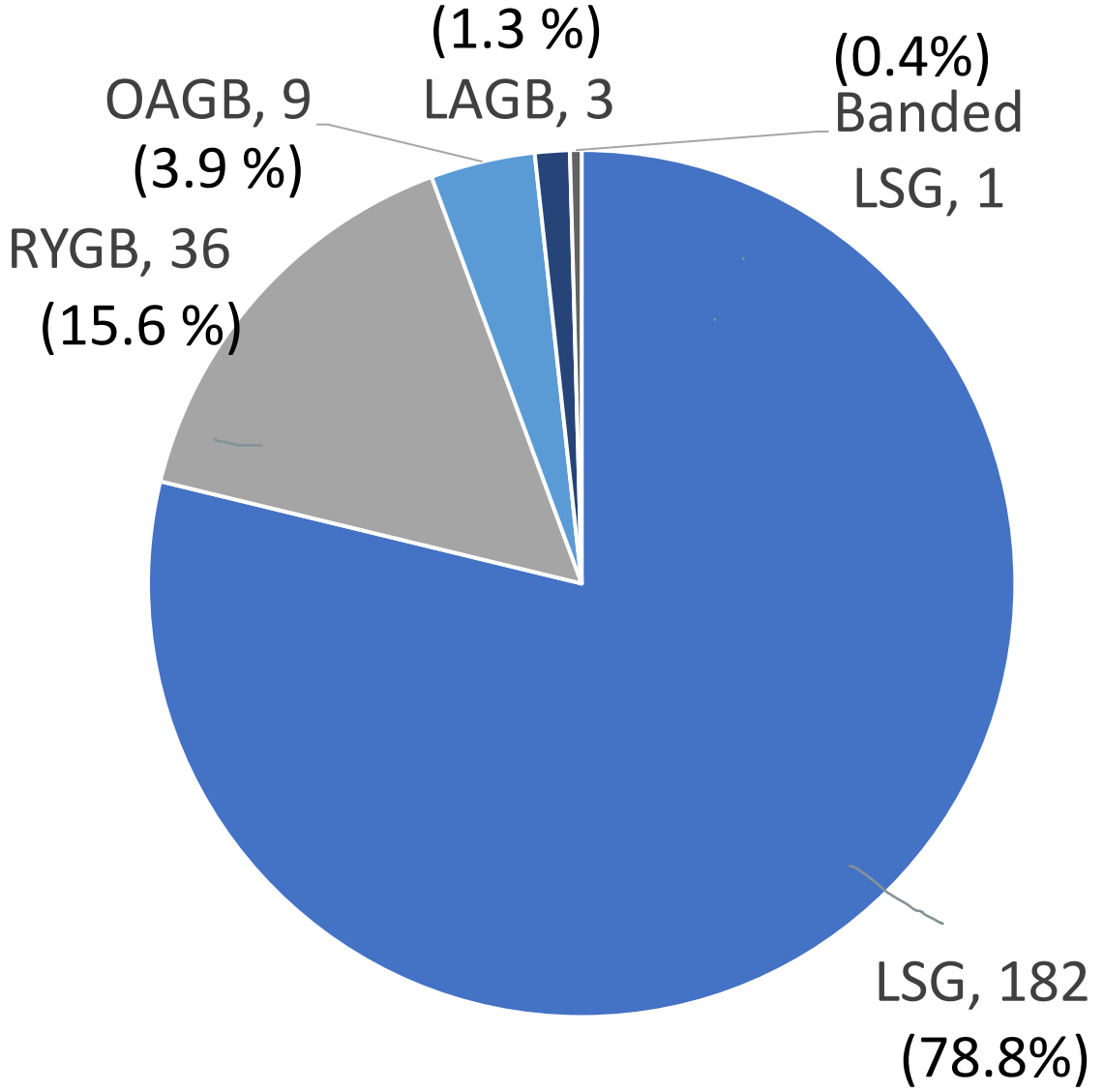
- Inferential analysis → IBM® Statistical Package for the Social Sciences® (SPSS®).

  - Linear mixed models → to compare baseline and follow-up data
  - Bonferroni post-hoc test → to pair-wise comparisons.
  - A *P* value < 0.05 was considered statistically significant.

Results - Patients' characteristics

Number of patients	231
Gender ratio Female/Male (%F/M)	176/55 (76.2/23.8)
Age - at the time of surgery (years) (Range)	47.0 ± 11.8 (18-73)
Body weight (kg ± SD) (Range)	122.1 ± 23.6 (74.4 – 220.0)
BMI (kg/m^2 ± SD) (Range)	43.4 ± 7.1 (31.0 – 66.5)
Excess weight (kg ± SD)	51.5 ± 19.8

Procedures



Primary vs. revisional surgery

185 / 46 *%: 80 / 20*

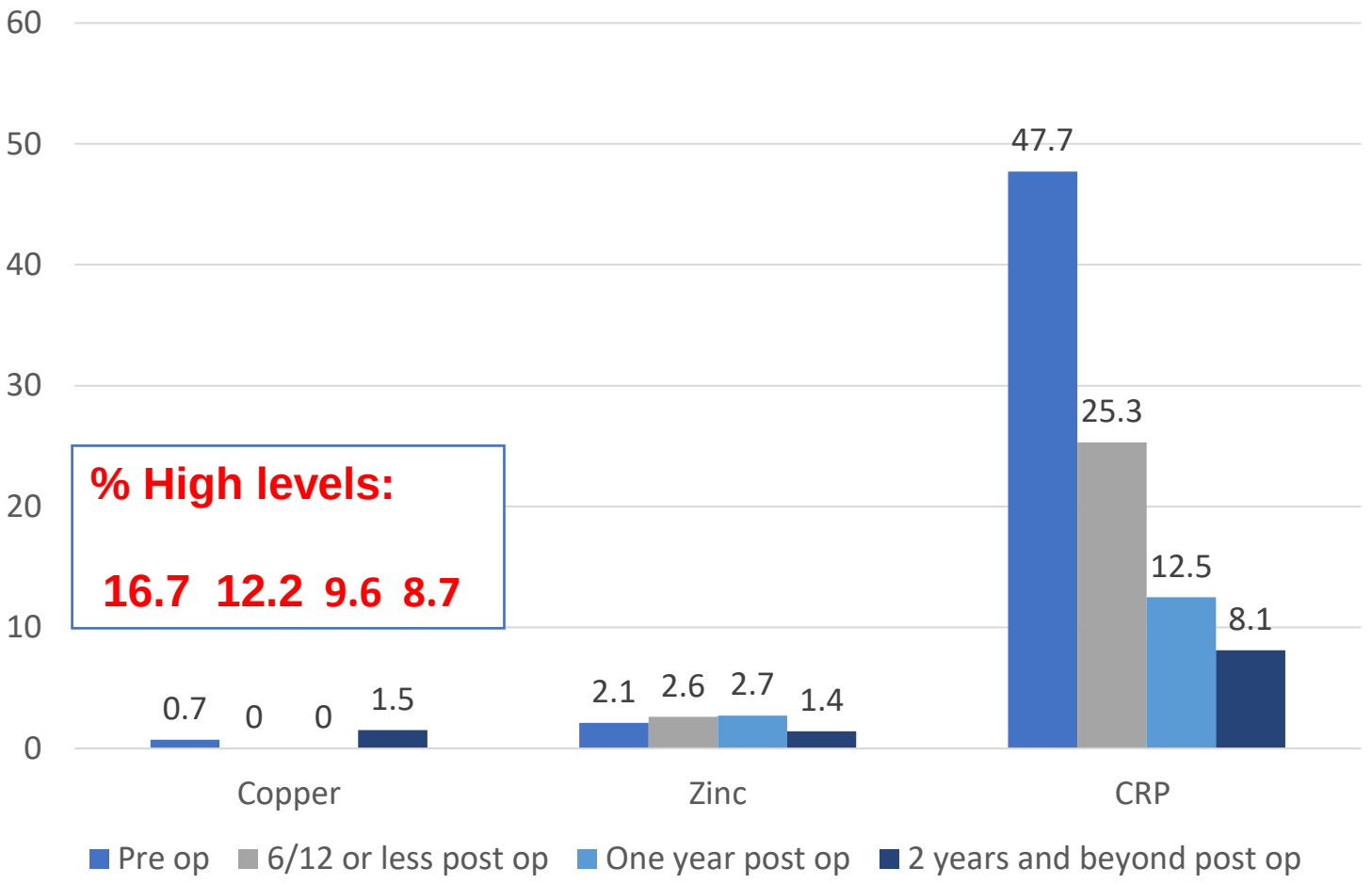
Cu & Zn abnormalities pre & post-operatively

Copper

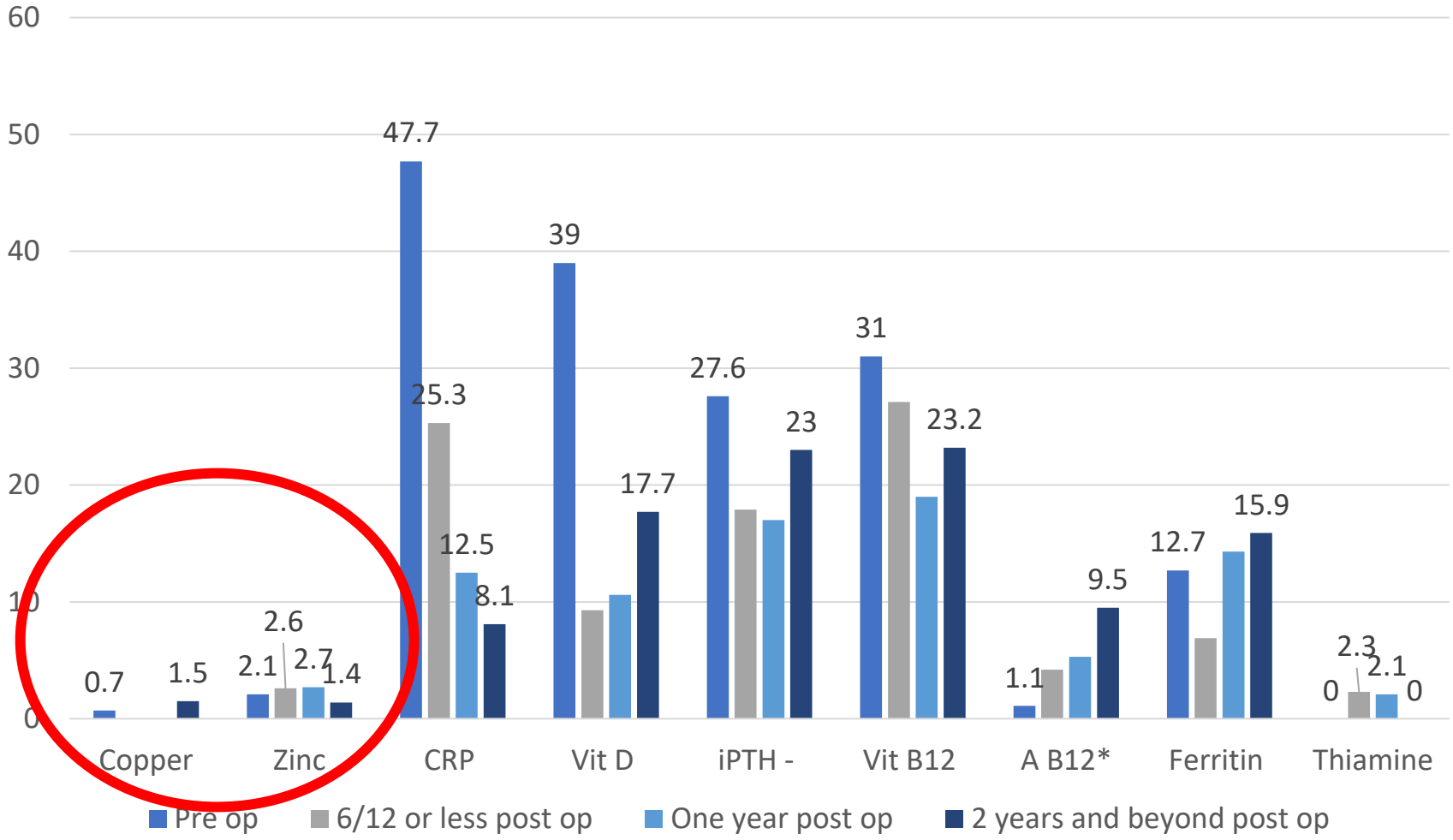
(12-22 umol/L)

Zinc

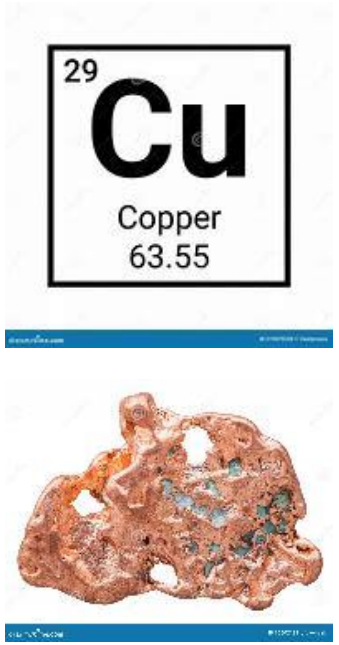
(10-18 umol/L)



Nutritional abnormalities pre & post-operatively

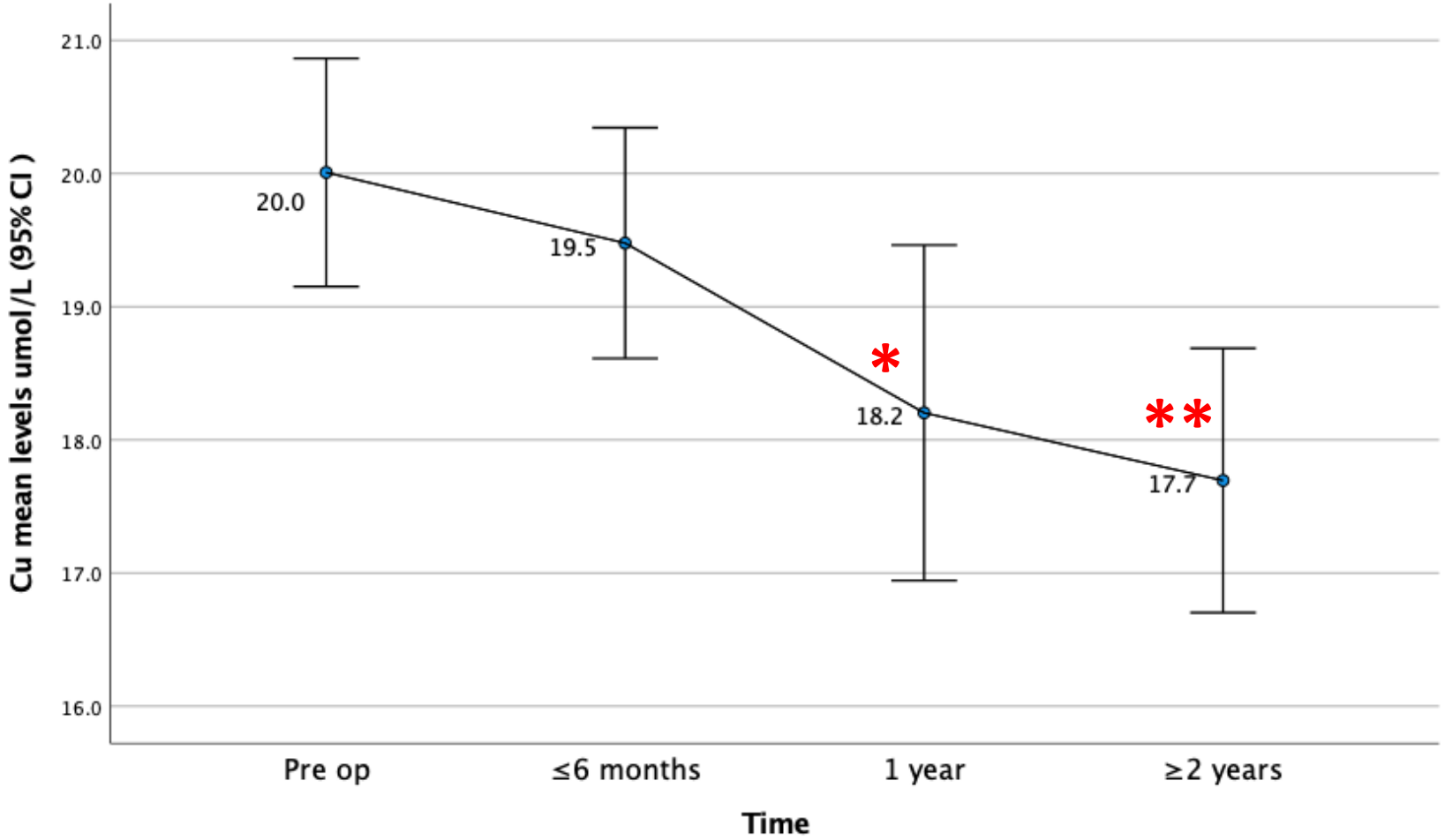


Mean Copper level change over time



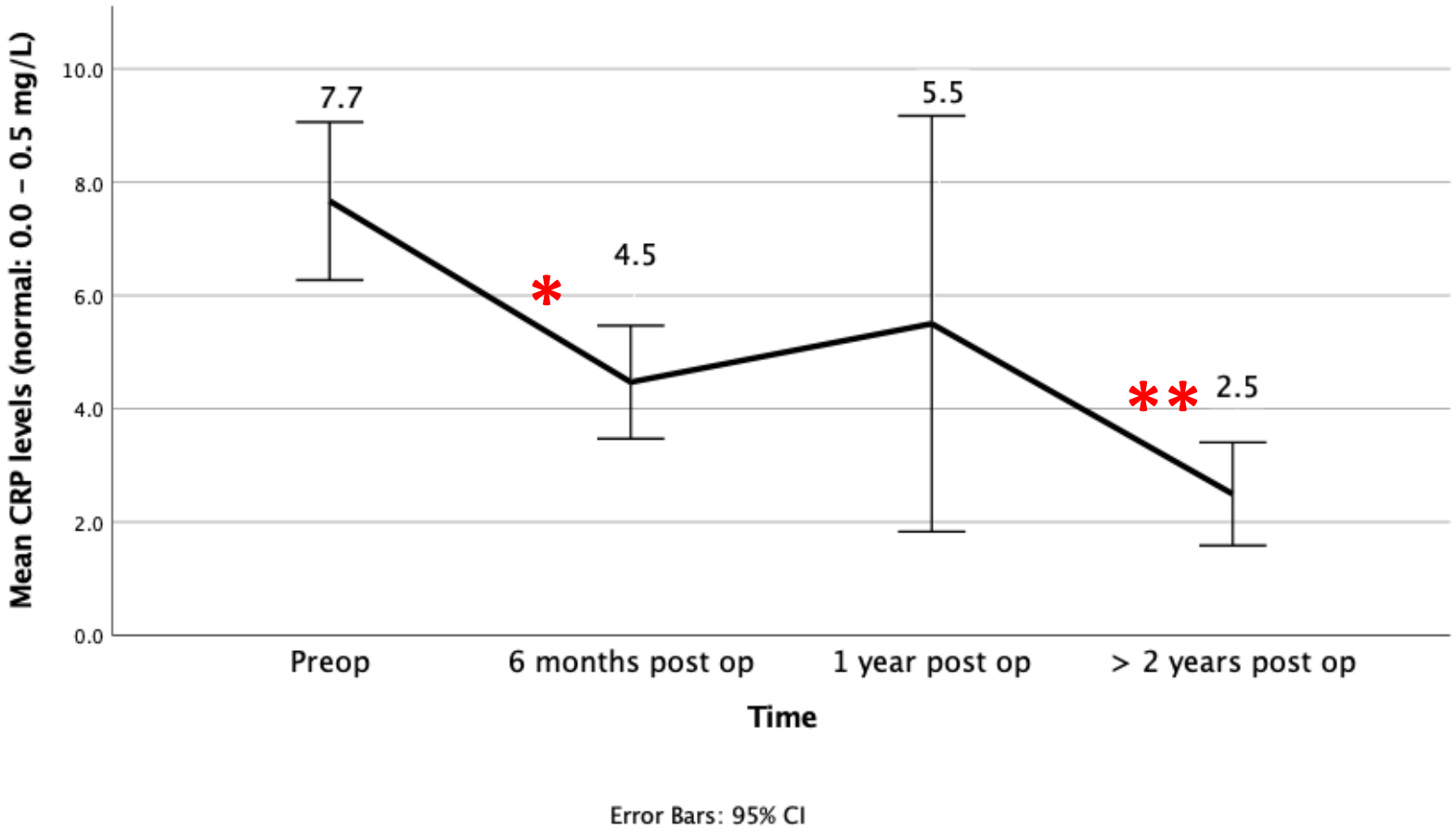
Copper

(12-22 umol/L)



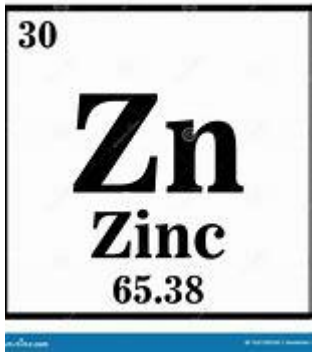
* Significant compared to pre op *P= <0.001* ** Significant compared to pre op *P= 0.001*

Mean C-reactive protein level change over time



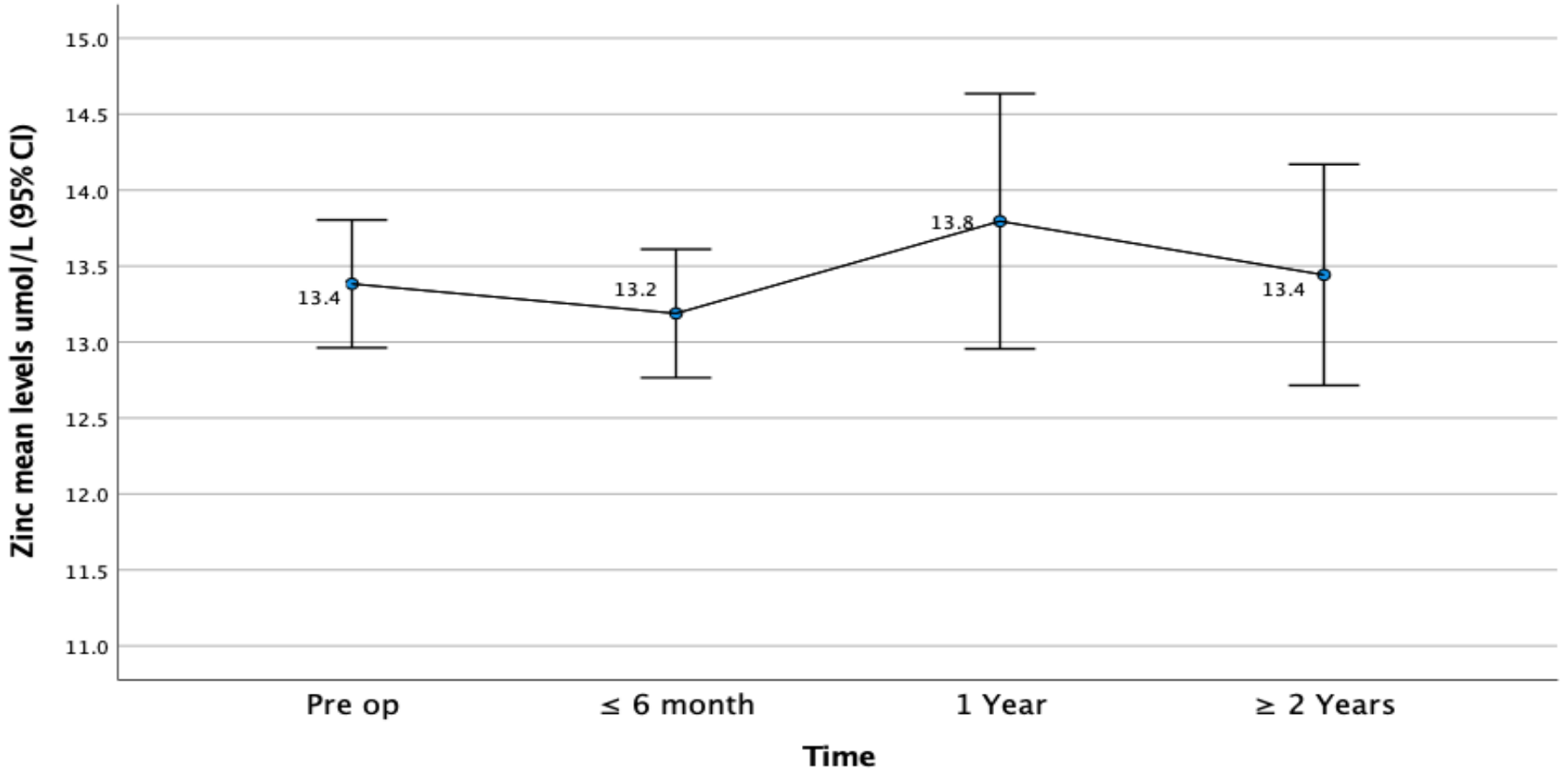
* Significant compared to pre op *P= 0.004* ** Significant compared to pre op *P= <0.001*

Mean Zinc level change over time



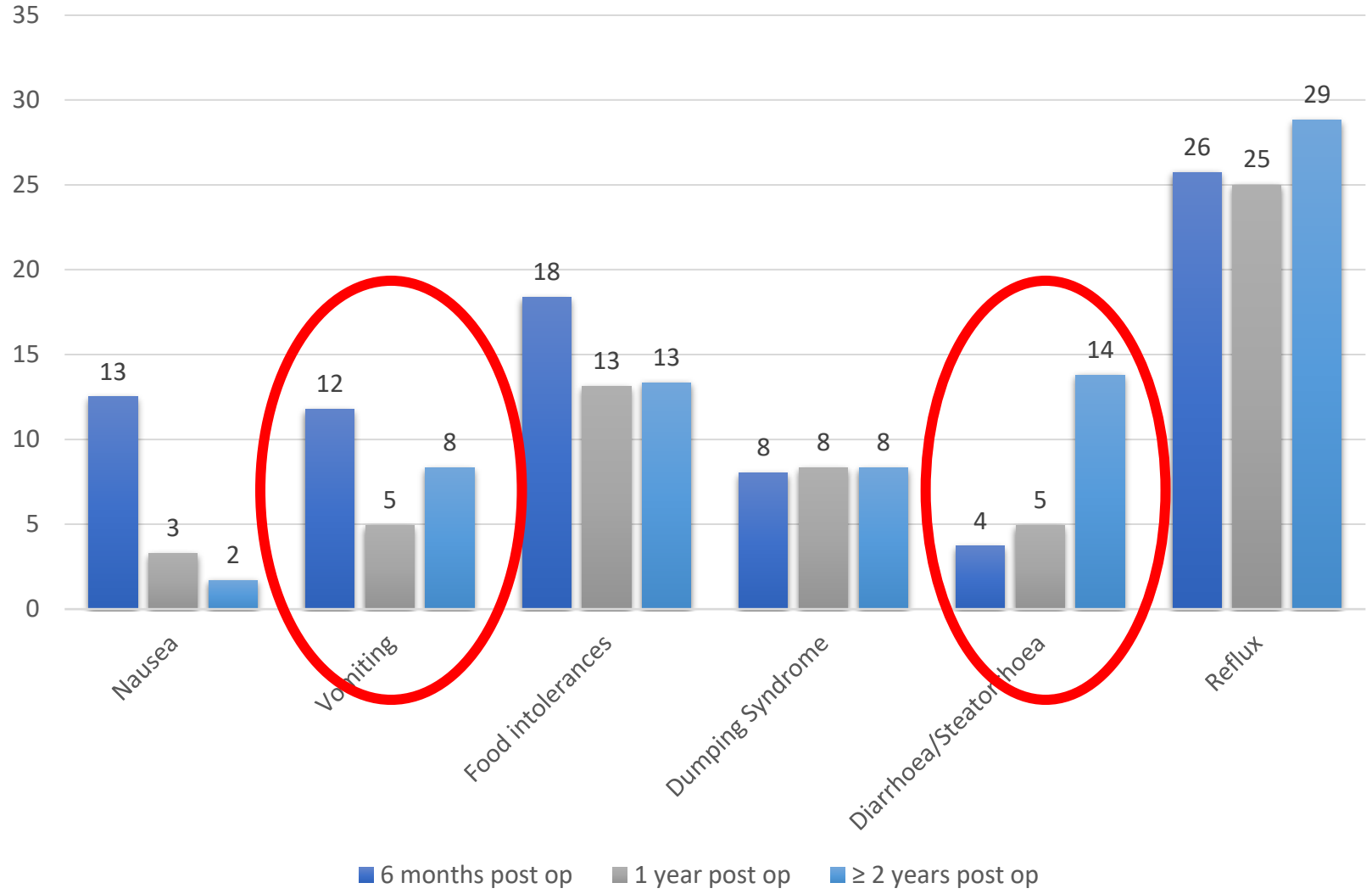
Zinc

(10-18 umol/L)



- No difference between pre and post-op values.

Reported gastrointestinal symptoms

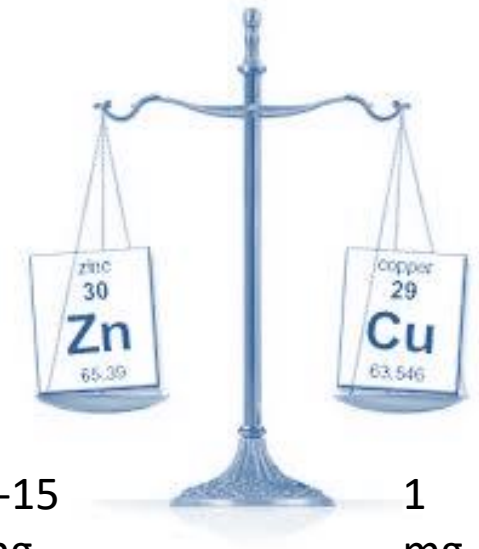


Limitation

- Retrospective nature of the study
- The majority of patients had sleeve gastrectomy procedures
- loss to F/U → underreporting the prevalence of deficiency

Conclusion

- Nutritional concerns remain an issue following MBS
- Cu and Zn abnormalities were not common in this cohort
- Risk of deficiency increases:
  - Due to the depletion of stores over the long term,
  - Reduce adherence to supplementation over time
  - In malabsorptive procedures
  - In those with persistent GIT symptoms



8-15 mg

1 mg

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- Dr. Elizabeth Neale
- Prof. Marijka Batterham
- A/Prof. Michael Talbot

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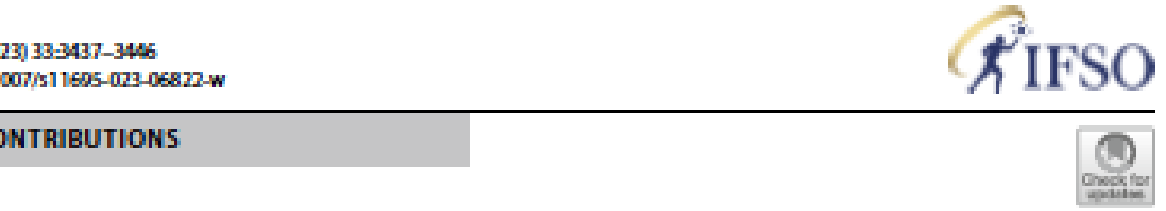
Dr. Steve Leibman


Obesity Surgery (2023) 33:3437–3446
https://doi.org/10.1007/s11695-023-06822-w

IFSO

ORIGINAL CONTRIBUTIONS

Check for updates

Investigating the Prevalence of Copper and Zinc Abnormalities in Patients Pre and Post bariatric Surgery—an Australian Experience

Nazy Zarshenas[1,2] · Linda C. Tapsell[1] · Marijka Batterham[3] · Elizabeth P. Neale[1] · Michael L. Talbot[4,5]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ORIGINAL RESEARCH

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Investigating the prevalence of nutritional abnormalities in patients prior to and following bariatric surgery

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