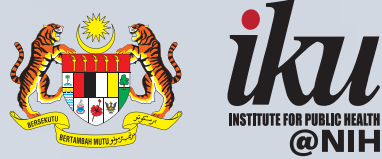


URINARY MINERALS EXCRETION AMONG MALAYSIAN ADULTS: A DESCRIPTIVE STUDY



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Introduction

- The minerals are essential trace elements which are important in human metabolism and prevention of chronic diseases.
- Studies have highlighted the role of minerals excretion in 24-hour urine as biomarkers for dietary intake assessment in the population¹.
- This study aimed to assess 24-hour urinary minerals excretion of calcium, magnesium, phosphorus, zinc, iron, iodine, copper, manganese, selenium and molybdenum among Malaysian adults.

Methodology

- This study utilised a 24-hour urine sample collected by the Malaysian Community Salt study (MyCoSS).
- MyCoSS was a nationwide cross-sectional study comprised of respondents ≥18 years old from urban and rural areas.
- A complete single 24-hour urine was collected by the respondents using two 2.5 litre screw-capped plastic containers.
- The minerals’ level was measured using Inductively Coupled Plasma-Mass Spectrometer (ICPMS).
- Descriptive analysis was conducted in SPSS Version 21.

Results

- Of the 615 respondents in this study, 57.2% of them were females, of Malay ethnicity (61.5%), between the ages of 30-50 years old (38.9%), from rural areas (59.3%) and with overweight/obese BMI (56.6%).
- Median urinary excretion of calcium was 36.70 mg/day, magnesium (14.01 mg/day), phosphorus (185.33 mg/day), iron (11.14 mg/day) and iodine (32.28 µg/day), zinc (134.67 mg/day), copper (3.43 µg/day), selenium (8.29 µg/day), manganese (0.23 µg/day) and molybdenum (26.65 µg/day).

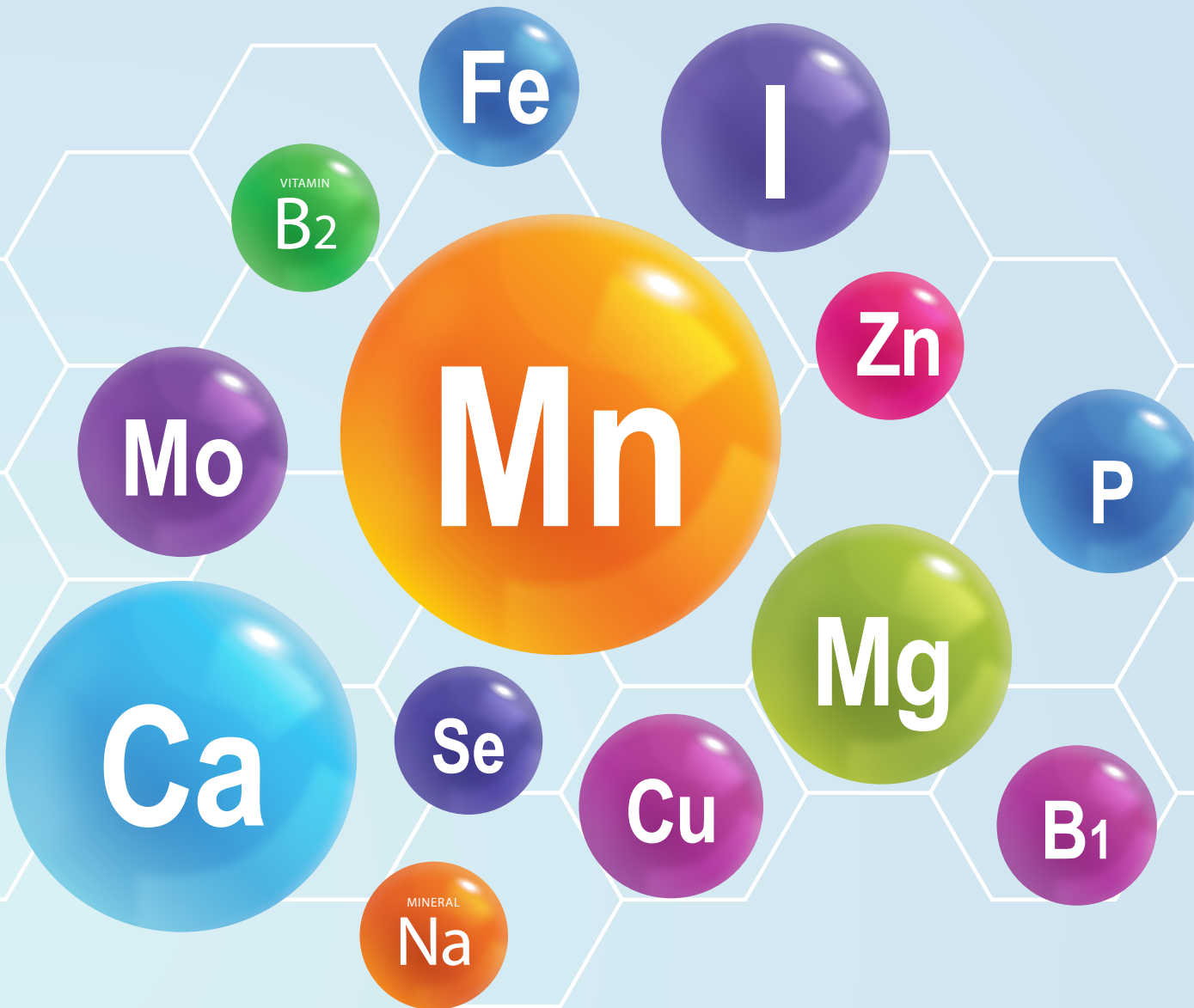


Table 1: Median urinary minerals excretion by gender

	Calcium (mg/day)	Magnesium (mg/day)	Phosphorus (mg/day)	Iron (mg/day)	Iodine (µg/day)	Zinc (mg/day)	Copper (µg/day)	Selenium (µg/day)	Manganese (µg/day)	Molybdenum (µg/day)
Male	41.69	16.18	235.76	12.99	37.41	175.49	4.28	9.11	0.23	31.89
Female	32.83	12.72	157.76	9.79	29.11	107.95	2.85	7.58	0.22	24.03

Discussion

- Male respondents have recorded a higher excretion of all 10 minerals in this study in comparison with females. Kesteloot et al. (1990) attributed higher dietary intake of the minerals and differences in physical activity between men and women for higher urinary minerals excretion among men compared to women in their study².
- Kimira et al. (2004) reported a higher excretion of calcium (166 mg/day), magnesium (80 mg/day) and phosphorus (624 mg/day) among their female respondents in comparison with female respondents in our study². Higher intake of bread and dairy foods contributed to higher excretion of calcium while a high intake of vegetables, fruits and potatoes significantly contributed to higher excretion of magnesium and phosphorus in the study².

Conclusion

- The findings of this study will compose the database of urinary minerals excretion of Malaysian adults for the benefits of the stakeholders in the Ministry of Health.
- The data also will be useful in projecting the dietary intake of the minerals.

Acknowledgement

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References

1. Yoshida M, Fukuwatari T, Sakai J, Tsuji T, Shibata K. Correlation between mineral intake and urinary excretion in free-living Japanese young women. Food and Nutrition Sciences. 2012 Jan 9;3(01):123.
2. Kesteloot H, Elliott P, Lesaffre E. On the sex ratio of urinary cation excretion obtained from Intersalt and other epidemiological studies. J Hum Hypertens. 1990;4(6):603-607.
3. Kimira M, Kudo Y, Takachi R, Haba R, Watanabe S. Associations between dietary intake and urinary excretion of sodium, potassium, phosphorus, magnesium, and calcium. Nihon Eiseigaku Zasshi. 2004 Jan;59(1):23-30.