

soluble vascular cell adhesion molecule (sVCAM) amongst others. Eighty three participants (48 women, 35 men) aged (mean  $\pm$  SD)  $65 \pm 7.7$  years, BMI  $28 \pm 4.5$  kg/m<sup>2</sup> with complete data entered the analysis. A general linear model multivariate analysis with a backward elimination stepwise procedure was performed (SPSS version 22).

**Results:** The final model built based on a parsimonious model, which included age, gender, BMI, McAuley's index as confounders but excluded season, medications and PTH, indicated that there were significant differences across vitamin D tertiles in TC (T1 > T3,  $p = 0.003$ ), LDL-cholesterol (T1 > T3,  $p = 0.005$ ), HGF (T1 < T3,  $p = 0.009$ ; T2 < T3,  $p = 0.047$ ) and sVCAM (T1 < T3,  $p = 0.04$ ).

**Conclusions:** Lower vitamin D status was associated with higher total and LDL-cholesterol, and lower HGF and sVCAM. Overall the data are suggestive of a role for the vitamin in CVD.

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#### ASSOCIATIONS BETWEEN DIETARY IRON AND ZINC INTAKES AND IRON AND ZINC STATUS IN PREMENOPAUSAL WOMEN

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**Background/Aims:** Foods recognised as good sources of iron tend to also contain zinc, and biochemical iron and zinc status may track each other. The aim of this study was to investigate whether there are associations between dietary iron and zinc intake, and between iron and zinc status in a convenience sample of Australian premenopausal women.

**Methods:** Women (18–50 years) were recruited in Melbourne and Sydney for this cross-sectional study. Dietary intake was assessed via a 150-item food frequency questionnaire (FFQ) and intakes were energy-adjusted using the residual method. Serum ferritin and serum zinc were used as markers of iron and zinc status. Demographic, anthropometric and blood donation information was collected. Multiple linear regression (dietary iron and serum ferritin as dependent variables) and  $\chi^2$  were used to investigate associations.

**Results:** The FFQ was completed by 382 women, with 86% also providing blood samples. Using multiple regression, dietary iron intake was associated with dietary zinc intake ( $\beta = 0.46$ ; 95% CI: 0.39, 0.54). There was also an association between natural log-transformed  $\mu\text{g/L}$  serum ferritin and  $\mu\text{mol/L}$  serum zinc ( $\beta = 0.06$ ; 95% CI: 0.02, 0.10), however prevalence of low zinc concentrations did not differ between women with low or adequate iron stores ( $p = 0.92$ ).

**Conclusions:** There appears to be a modest association between dietary iron and zinc intake and a possible association between iron and zinc status in Australian premenopausal women.

**Funding source(s):** Deakin University Partnership Grant Scheme; Centre for Physical Activity and Nutrition Research; Australian Red Cross Blood Service; Meat & Livestock Australia Ltd.

#### DIETARY MICRONUTRIENT INTAKE AND CARDIOVASCULAR RISK FACTORS IN A POPULATION AT RISK OF HEART FAILURE

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**Background/Aims:** It has been suggested that mild deficiencies of key micronutrients may influence risk of development of heart failure. The present study aimed to examine the relationship between micronutrient intake, cardiovascular risk factors and left ventricular hypertrophy in a cohort of older persons at risk of developing heart failure.

**Methods:** In a cohort of 460 men and women (mean age  $\pm$  SD:  $72 \pm 5$  years) dietary intake was assessed using a 4-day weighed food diary. Cardiovascular health and risk was examined by a series of measures including medical history, anthropometry, blood pressure, and echocardiography. Multivariate regression analyses were used to examine the relationships between micronutrient intake, cardiovascular risk and function.

**Results:** More than half of this at-risk cohort consumed less than recommended levels of calcium, folate, zinc and magnesium, and less than 20% met sodium intake recommendations. After covariate adjustment, magnesium intake was inversely correlated with heart rate ( $\beta = -0.095$ ,  $p = 0.038$ ). Left ventricular mass index was positively associated with dietary niacin intake in this group ( $\beta = 0.206$ ,  $p = 0.005$ ), however no other echocardiographic measures were associated with dietary micronutrient intake.

**Conclusions:** In a cohort at risk of heart failure and with deficiencies in dietary intake of several micronutrients, magnesium intake was associated with a lower heart rate. The association between niacin intake and left ventricular hypertrophy suggests prospective examination of niacin intake and development of diastolic dysfunction should be undertaken.

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#### TOOLS USED TO ASSESS FLAVONOID INTAKE OF ADULTS IN FOOD-BASED STUDIES: A SYSTEMATIC LITERATURE REVIEW

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**Background/Aims:** To identify the patterns of use and origins of tools used to assess adult flavonoid intake.

**Methods:** A systematic literature review using Scopus and Web of Science databases (2009–2014) with keywords 'phytochemical\*', 'flavonoid\*', 'food\*', 'database\*' and 'human\*' was conducted. Publications were limited to English language, and food-based studies involving participants  $\geq 18$  years, assessing flavonoid and/or flavonoid subclass intake using a specified tool or combination of tools.

**Results:** Twenty two publications were included. Ten differing tools with varying versions and release dates were used, of which 77% ( $n = 17$ ) used more than one tool and/or constructed their own tools using amalgamations of data from those pre-existing; including USDA databases for flavonoid, proanthocyanidin or isoflavone content of selected foods, and the Phenol-Explorer database. Flavonoid and/or subclass assessed and the country in which food intake data originated appeared to influence the tool/s chosen. The flavonoid examined varied which impacted on the tool chosen. One US study demonstrated this, estimating proanthocyanidin intake using the USDA proanthocyanidin database. One Australian and one Korean study sourced tools from other countries because no geographically relevant phytochemical database existed, indicating a clustering of tools towards certain areas of the world.

**Conclusions:** A range of tools are used worldwide to assess flavonoid intake of adults. Phytochemical class to be assessed, and the country where intake data is being collected are important considerations when selecting appropriate tools to estimate intake. Development of tools that are more geographically suited to certain regions of the world are needed.

**Funding source(s):** NHMRC.

#### A SYSTEMATIC INVESTIGATION OF THE MOST ACCURATE AND COST-EFFECTIVE METHOD FOR MEASURING IODINE DEFICIENCY FOR PREGNANT WOMEN

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**Background/Aims:** Iodine deficiency (ID) is a global public health problem and the most common cause of preventable foetal brain damage during pregnancy. The aim of this study was to determine the most accurate and cost effective method available to monitor ID in pregnant women.

**Methods:** A systematic literature review using the MEDLINE and Scopus databases (1994–2014) and combinations of keywords: monitor\*, observ\*,