

**Results:** We found no evidence of reduced depression ( $p = 0.339$ ), reduced anxiety ( $p = 0.862$ ), higher flourishing ( $p = 0.453$ ), higher positive moods ( $p = 0.518$ ) or lower negative moods ( $p = 0.538$ ) in the treatment group compared to the control group. Wellbeing trajectories over the study period were similar for the two groups. Sensitivity analyses did not show an effect for those with low starting vitamin D or wellbeing either.

**Conclusions:** Supplemental vitamin D may not be suitable and needed for improving psychological wellbeing in healthy women over the winter period.

**Funding source(s):** University of Otago Research Grant.

## Concurrent session 7: hypertension

### HYPOCALORIC DIETARY ADVICE TARGETING INCREASED N-3 PUFA INTAKE DOES NOT INCREASE BLOOD PRESSURE REDUCTION OVER 3 MONTHS

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**Background/Aims:** Epidemiological studies report an inverse association between long chain n-3 PUFA (LCn-3PUFA) intake and blood pressure (BP). This study assessed 3-month change in BP in participants enrolled in a 12-month weight loss trial targeting increased LCn-3PUFA intake.

**Methods:** A parallel randomised placebo-controlled trial was conducted in 118 obese Australian adults (mean  $\pm$  SD BMI  $31.3 \pm 3.5$  kg/m<sup>2</sup>; age  $45 \pm 10$  years). Participants received (1) low calorie dietary advice (2 MJ energy deficit; 30%E fat, 45%E carbohydrate, 25%E protein) + placebo (1 g olive oil) (Control), (2) low calorie dietary advice emphasising two servings (180 g) fatty fish/wk + placebo (Fish), or (3) low calorie dietary advice emphasising fish diet + LCn-3PUFA supplements (Fish+S). Office BP was measured as a secondary outcome. Statistical analysis included linear mixed models and partial correlations.

**Results:** At 3 months, all groups lost a similar amount of weight, Control:  $-5.1 \pm 3.3$ ; Fish:  $-4.3 \pm 2.8$ ; Fish+S:  $-4.8 \pm 3.2$  kg. There was a trend for greater reductions in systolic BP in the intervention groups, Fish:  $-4.24 \pm 14.11$ ; Fish+S:  $-6.83 \pm 8.79$ ; Control:  $-2.75 \pm 10.30$  mmHg, but this was not significant in models that adjusted for weight change (systolic BP:  $p = 0.600$ ; diastolic BP:  $p = 0.574$ ). No associations were found between change in BP and change in total n-3PUFA, n-6PUFA or individual red blood cells fatty acids.

**Conclusions:** Weight loss is a more important predictor of change in BP, regardless of the amount or type of dietary fat consumed.

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

### SALT AND HYPERTENSION IN RURAL AND URBAN POPULATIONS OF LOW TO MIDDLE INCOME COUNTRIES: A SYSTEMATIC REVIEW AND META-ANALYSIS

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**Background/Aims:** Hypertension is the greatest contributor to mortality globally, and its prevalence is increasing in low to middle income countries (LMICs). In urban regions of LMICs, excessive salt intake is associated with increased risk of hypertension. Whether this is also true in rural regions remains to be determined.

**Methods:** We searched electronic databases to identify studies in rural and urban areas of LMICs in which the association of salt and hypertension were assessed using multivariable models. A meta-analysis was conducted to assess these associations.

**Results:** We identified 17 studies with a total of 131,692 participants. The pooled effect size (ES) for studies in which salt intake was assessed as a categorical variable defined by cut-offs specific to each study in rural populations ( $n = 7$ ) was 1.32 (95%CI: 1.21, 1.45,  $p = 0.047$ ). There was a similar positive association between salt and hypertension in women from urban areas ( $n = 2$ ), ES:

1.46 (1.35, 1.57) and women from rural areas ( $n = 3$ ), ES: 1.31 (1.11, 1.56),  $p = 0.600$ . Men from rural populations ( $n = 3$ ) also had a similar risk of hypertension when consuming greater levels of salt, ES: 1.46 (1.14, 1.87) compared to men from urban populations ( $n = 2$ ), ES: 1.41 (1.22, 1.63),  $p = 0.812$ .

**Conclusions:** Salt is a significant risk factor for hypertension in urban and rural areas. Population specific salt reduction strategies should be implemented in order to drive a change in dietary behaviour.

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

### EFFECT OF NITRATE-RICH VEGETABLES ON NITRATE METABOLISM AND VASCULAR OUTCOMES IN SUBJECTS WITH HIGH-NORMAL BLOOD PRESSURE

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**Background/Aims:** Evidence for beneficial effects of dietary nitrate, through the nitrate-nitrite-NO pathway, on measures of vascular function in healthy individuals is accumulating. Whether similar beneficial effects occur in individuals at increased risk of hypertension is unknown. Our aim was to assess short term regular consumption of increased nitrate from green leafy vegetables on nitrate metabolism, blood pressure and arterial stiffness in individuals with high-normal blood pressure.

**Methods:** Thirty eight men and women (systolic blood pressure, SBP 120 - 139 mmHg) were recruited to a randomised controlled cross-over trial. Effects of 7 days high nitrate diet (nitrate intake > 300 mg/day from green leafy vegetables) on salivary and plasma nitrate and nitrite, ambulatory, home and office blood pressure, augmentation index and carotid-femoral pulse wave velocity were compared to 7 days low nitrate diet. In 19 volunteers, randomised to high nitrate in first intervention period, time for salivary and plasma nitrate and nitrite to return to baseline after 7 days high nitrate diet was determined.

**Results:** High nitrate diet resulted in a more than fourfold increase in salivary and plasma nitrate (both by 650%,  $p < 0.001$ ) and nitrite (by 680% and 385% respectively,  $p < 0.001$ ). These decreased rapidly, returning to baseline by day 7 post the high nitrate diet. Ambulatory, home and office blood pressure and arterial stiffness were not different between 2 diets.

**Conclusions:** Increasing dietary nitrate intake in those with high normal blood pressure may not be an effective short-term strategy to lower blood pressure in those at increased risk of hypertension.

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

### ANTIBACTERIAL MOUTHWASH BLUNTS ORAL NITRATE REDUCTION AND INCREASES BLOOD PRESSURE IN TREATED HYPERTENSIVE SUBJECTS

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**Background/Aims:** Endothelial-derived nitric oxide (NO) is recognised as being fundamental to vascular health. A second metabolic pathway to NO – the exogenous nitrate-nitrite-NO pathway – is also an important contributor to circulating NO. Dietary nitrate, as well as nitrate derived from oxidation of endothelial-derived NO enters this metabolic pathway and contributes to the NO pool. A critical step in this pathway is the reduction of nitrate to nitrite by oral bacteria on the dorsal surface of the tongue. Therefore, we aimed to determine if use of an antibacterial mouthwash interrupts nitrate reduction and thereby leads to elevated blood pressure in treated hypertensive individuals.

**Methods:** Fifteen treated hypertensive men and women were recruited to a randomised controlled cross-over trial. Effects of 3 days (twice daily) use