| **Study** | **Participants** | **Intervention(s)** | **IntakeStatus Ascertainment** | **Findings - Outcomes and Comparison** |
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| Zhou, 200998Location: ChinaSetting: CommunityDesign: Randomized, parallelNumber of Sites: 10Study Years: 2003-2004 | Study of: AdultsN: 248Intervention 1:% Male: 43.5Mean Age/Range/Age at Baseline: mean 67.5 (SD 5.2)Race: NRSystolic BP: 159.7Diastolic BP: 83.3Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 25.2% with Hypertension: 100% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRComparator 1: NR% Male: 42.2Mean Age/Range/Age at Baseline: mean 65.7 (SD 6.3)Race: NRSystolic BP: 157.7Diastolic BP: 82.7Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 24.9% with Hypertension: 100% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRIntervention 2:% Male: 49.1Mean Age/Range/Age at Baseline: mean 68.1 (SD 8.3)Race: NRSystolic BP: 125Diastolic BP: 74.3Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 23.9% with Hypertension: 0% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRComparator 2: NR% Male: 44.6Mean Age/Range/Age at Baseline: mean 65.4 (SD 4.5)Race: NRSystolic BP: 123.8Diastolic BP: 74.5Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 23.7% with Hypertension: 0% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRInclusion: Ages 50–80, with normal BP or mild to moderate hypertension. No more than one meal outside the home per week, not currently taking potassium-sparing drugs, willingness to undertake long-term use of CISalt. Serum potassium <5.5mmol/l and net elevation of serum potassium <1.0mmol/l at the end of the run-in periodExclusion: Heart attack or stroke within the last 6 months, current angina pectoris, congestive heart failure, diabetes mellitus, serious mental or physical illness, secondary hypertension, malignancy, use of potassium-sparing diuretics, impairment of renal function. | Intervention Type(s):Intervention 1: Other: Low sodium salt-HypertensivesDescription: Total of 3 kg a month of study salt (lower sodium) was given to each participant’s family to cover all cooking and other usesForm of Administration: Salt substituteDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRComparator 1: Other: Normal salt - HypertensivesDescription: Total of 3 kg a month of normal salt was given to each participant’s family to cover all cooking and other usesForm of Administration: Regular SaltDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRIntervention 2: Other: Low sodium salt-NormotensivesDescription: Total of 3 kg a month of study salt (lower sodium) was given to each participant’s family to cover all cooking and other usesForm of Administration: Salt substituteDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRComparator 2: Other: Normal salt - NormotensivesDescription: Total of 3 kg a month of normal salt was given to each participant’s family to cover all cooking and other uses.Form of Administration: Other: Regular saltDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRDuration: 6 monthsExposure to Follow Up Time: NR | Sodium measure: Single 24-hour urinary analysis without reported quality control measureBest sodium measure recorded: 2 times, 6 months apartSodium Status Intervention 1: 162 mmol/24 hSodium Status Comparator 1: 233 mmol/24 hSodium Status Intervention 2: 162 mmol/24 hSodium Status Comparator 2: 231 mmol/24 hPotassium measure: Single 24-hour urine analysis without validationBest potassium measure recorded: 2 times, 6 months apartPotassium Status Intervention 1: 34.2 mmol/24 hPotassium Status Comparator 1: 27.0 mmol/24 hPotassium Status Intervention 2: 33.1 mmol/24 hPotassium Status Comparator 2: 23.0 mmol/24 hHow was blood pressure measured? BP was measured by two experienced physicians. SBP was taken as the point of appearance (phase 1) of Korotkoff sounds and DBP was measured as the point of disappearance (phase 5). | Subgroup: NormotensiveDiastolic BP-NSFollow-Up Time: 6 monthsComparison: Intervention 2 vs Comparator 2MD -4.80 (95% CI: -7.05 - -2.55)Systolic BP-NSFollow-Up Time: 6 monthsComparison: Intervention 2 vs Comparator 2MD -5.80 (95% CI: -8.66 - -2.94) |
| Zhou, 200998Location: ChinaSetting: CommunityDesign: Randomized, parallelNumber of Sites: 10Study Years: 2003-2004 | Study of: AdultsN: 248Intervention 1:% Male: 43.5Mean Age/Range/Age at Baseline: mean 67.5 (SD 5.2)Race: NRSystolic BP: 159.7Diastolic BP: 83.3Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 25.2% with Hypertension: 100% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRComparator 1: NR% Male: 42.2Mean Age/Range/Age at Baseline: mean 65.7 (SD 6.3)Race: NRSystolic BP: 157.7Diastolic BP: 82.7Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 24.9% with Hypertension: 100% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRIntervention 2:% Male: 49.1Mean Age/Range/Age at Baseline: mean 68.1 (SD 8.3)Race: NRSystolic BP: 125Diastolic BP: 74.3Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 23.9% with Hypertension: 0% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRComparator 2: NR% Male: 44.6Mean Age/Range/Age at Baseline: mean 65.4 (SD 4.5)Race: NRSystolic BP: 123.8Diastolic BP: 74.5Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 23.7% with Hypertension: 0% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRInclusion: Ages 50–80, with normal BP or mild to moderate hypertension. No more than one meal outside the home per week, not currently taking potassium-sparing drugs, willingness to undertake long-term use of CISalt. Serum potassium <5.5mmol/l and net elevation of serum potassium <1.0mmol/l at the end of the run-in periodExclusion: Heart attack or stroke within the last 6 months, current angina pectoris, congestive heart failure, diabetes mellitus, serious mental or physical illness, secondary hypertension, malignancy, use of potassium-sparing diuretics, impairment of renal function. | Intervention Type(s):Intervention 1: Other: Low sodium salt-HypertensivesDescription: Total of 3 kg a month of study salt (lower sodium) was given to each participant’s family to cover all cooking and other usesForm of Administration: Salt substituteDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRComparator 1: Other: Normal salt - HypertensivesDescription: Total of 3 kg a month of normal salt was given to each participant’s family to cover all cooking and other usesForm of Administration: Regular SaltDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRIntervention 2: Other: Low sodium salt-NormotensivesDescription: Total of 3 kg a month of study salt (lower sodium) was given to each participant’s family to cover all cooking and other usesForm of Administration: Salt substituteDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRComparator 2: Other: Normal salt - NormotensivesDescription: Total of 3 kg a month of normal salt was given to each participant’s family to cover all cooking and other uses.Form of Administration: Other: Regular saltDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRDuration: 6 monthsExposure to Follow Up Time: NR | Sodium measure: Single 24-hour urinary analysis without reported quality control measureBest sodium measure recorded: 2 times, 6 months apartSodium Status Intervention 1: 162 mmol/24 hSodium Status Comparator 1: 233 mmol/24 hSodium Status Intervention 2: 162 mmol/24 hSodium Status Comparator 2: 231 mmol/24 hPotassium measure: Single 24-hour urine analysis without validationBest potassium measure recorded: 2 times, 6 months apartPotassium Status Intervention 1: 34.2 mmol/24 hPotassium Status Comparator 1: 27.0 mmol/24 hPotassium Status Intervention 2: 33.1 mmol/24 hPotassium Status Comparator 2: 23.0 mmol/24 hHow was blood pressure measured? BP was measured by two experienced physicians. SBP was taken as the point of appearance (phase 1) of Korotkoff sounds and DBP was measured as the point of disappearance (phase 5). | Subgroup: NormotensiveDiastolic BP-NSFollow-Up Time: 6 monthsComparison: Intervention 2 vs Comparator 2MD -4.80 (95% CI: -7.05 - -2.55)Systolic BP-NSFollow-Up Time: 6 monthsComparison: Intervention 2 vs Comparator 2MD -5.80 (95% CI: -8.66 - -2.94) |
| Matthesen, 2012102Location: DenmarkSetting:Design: Randomized Cross-over individualNumber of Sites:Crossover: Length of washout period: 14 daysStudy Years: unclear | Study of: NRN: 21Participants:% Male: 43Mean Age/Range/Age at Baseline: mean 26 (range: 18-40)Race: 100Systolic BP: 116Diastolic BP: 71Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 23% with Hypertension: NR% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRInclusion: Ages 18-40 years; BMI 18.5- 30 kg/m 2Exclusion: Arterial hypertension; history of or clinical signs of disease in the heart, lungs, liver, brain or endocrine organs; current medical treatment; malignancies; substance or alcohol abuse; smoking; pregnancy; breast-feeding; no contraceptive treatment for fertile aged women ; clinically significant abnormalities in the blood screening with respect to haemoglobin, white cell count, platelet count, sodium, potassium, creatinine, alanine and aspartate aminotransferase, albumin, cholesterol and glucose. Clinically significant abnormal screening of the urine with respect to albumin and glucose; abnormal electrocardiogram; intercurrent diseases; blood donation less than one month before the trial; unwillingness to participate in the trial; issues with establishing IV access or urine collection. | Intervention Type(s):Intervention 1: Use of potassium supplement to increase potassium levelsDescription: Participants were given a standardized dietForm of Administration: Oral potassium supplementDose: 50 mmol potassium twice dailyNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRComparator: PlaceboDescription: Participants were given a standardized dietForm of Administration: PlaceboDose: PlaceboNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRDuration: 1 monthExposure to Follow Up Time: NR | Sodium measure: More than one 24-hour urinary analysis without reported quality control measureBest sodium measure recorded: twice separated by 28 daysSodium Status Intervention 1: 199 mmol/24 hPotassium measure: More than one 24-hour urinary analysis without reported quality control measure\_1Best potassium measure recorded: twice separated by 28 daysPotassium Status Intervention 1: 168 mmol/24 hHow was blood pressure measured? Ambulatory blood pressure taken using Kiwex TM-2430. In the day, pulse and blood pressure were measured every 15 min. During the night, pulse and blood pressure were measured in 30 min intervals | Subgroup: Normotensive24 h ambulatory- diastolicFollow-Up Time: 28 daysComparison: Intervention 1 vs ComparatorMD 1.00 (95% CI: -1.80 - 3.80)24 h ambulatory- systolicFollow-Up Time: 28 daysComparison: Intervention 1 vs ComparatorMD 0.00 (95% CI: -3.42 - 3.42)AldosteroneFollow-Up Time: 28 daysComparison: Intervention 1 vs ComparatorMD 60.00 (95% CI: -100.65 - 220.65) |
| Nowson, 200318Location: AustraliaSetting: CommunityDesign: Randomized Cross-over individualNumber of Sites: 1Crossover: Length of washout period: NR daysStudy Years: NR | Study of: AdultsN: 108Participants:% Male: 41Mean Age/Range/Age at Baseline: 47Race: NRSystolic BP: 126.4+/-18.6Diastolic BP: 79.2+/-11.9Magnesium: NRCalcium: NROther Minerals: sodium: 138.7+/-53.9; potassium: 78.6+/-23.7Mean BMI: 26.1+/-4.2% with Hypertension: 15% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRInclusion: Twin pairs 30 years or olderExclusion: currently undergoing treatment for cancer or renal disease; requiring insulin treatment for diabetes | Intervention Type(s):Intervention 1: Dietary/lifestyle counseling (single or multiple sessions, including dietary advice) to reduce sodium intakeDescription: Low sodium/high potassium diet to achieve 50 mmol sodium and 80 mmol potassiumForm of Administration: Dietary Modification: Low sodium, high potassium diet and placebo sodium pillsDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRComparator: Dietary/lifestyle counseling (single or multiple sessions, including dietary advice) to reduce sodium intakeDescription: Low sodium/high potassium diet to achieve sodium mmol and 80 mmol potassium and sodium supplementation with slow sodium tablets to achieve 130 mmol/d sodiumForm of Administration: Dietary Modification: Low sodium, high potassium diet Sodium supplementDose: NRNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRDuration: 4 weeksExposure to Follow Up Time: 0 months | Sodium measure: Multiple 24-hour urine analysis with validationBest sodium measure recorded: 24-hour urine 3 times, 1 week apart during each 4-week phaseSodium, Method of Validation: creatinine, Multiple 24-hour urine analysis with validationSodium Status Intervention 1: 89.4+/-4.2 mmol/dBest potassium measure recorded: 24-hour urine 3 times, 1 week apart during each 4-week phasePotassium, Method of Validation: NRPotassium Status Intervention 1: 87.1+/-2.1 mmol/dHow was blood pressure measured? mercury sphygmomanometer (model ALPK2; Stethoscope and Sphygmomanometer Specialists, Melbourne, Australia) while seated | Subgroup: NormotensiveHome measured BP, diastolicFollow-Up Time: 4 weeksComparison: Intervention 1 vs ComparatorMD -0.90 (95% CI: -5.78 - 3.98)Home measured BP, systolicFollow-Up Time: 4 weeksComparison: Intervention 1 vs ComparatorMD -2.30 (95% CI: -2.81 - -1.79) |
| Sacks, 200110Vollmer, 200111; Svetkey, 200412; Harsha, 200413; Akita, 200314Location: USSetting: CommunityDesign: Randomized Cross-over individualStudy Name:DASH-SodiumNumber of Sites: multipleCrossover: Length of washout period: <5 daysStudy Years: NR | Study of: AdultsN: 79Mean Age/Range/Age at Baseline: 49(10)Race: 56% black; 40% NH white; 5% Asian/otherSystolic BP: 135(10)Diastolic BP: 86(4)Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 30(5)% with Hypertension: 41% with history of CVD: 0% with Type 2 diabetes: 0% with Kidney disease: 0% with history of Kidney stones: 0Mean Age/Range/Age at Baseline: 47+/-10Race: 57% black; 40% NH white; 3% Asian/otherSystolic BP: 134+/-10Diastolic BP: 86+/-5Magnesium: NRCalcium: NROther Minerals: NRMean BMI: 29+/-5% with Hypertension: 41% with history of CVD: 0% with Type 2 diabetes: 0% with Kidney disease: 0% with history of Kidney stones: 0Comparator:% Male: NRMean Age/Range/Age at Baseline: NRRace: NRSystolic BP: NRDiastolic BP: NRMagnesium: NRCalcium: NROther Minerals: NRMean BMI: NR% with Hypertension: NR% with history of CVD: NR% with Type 2 diabetes: NR% with Kidney disease: NR% with history of Kidney stones: NRInclusion: 22 years old or more, average systolic blood pressure 120 to 159 mm Hg (over 3 visits) and average diastolic blood pressure 80 to 95 mm HgExclusion: heart disease, renal insufficiency, poorly controlled hyperlipidemia or diabetes mellitus, diabetes requiring insulin, special dietary requirements, more than 14 alcoholic drinks per week, or use of antihypertensive drugs or other medications that would affect blood pressure or nutrient metabolism | Intervention Type: Intervention 1: Prescribed or synthetic diet (all food provided) with sodium quantifiedDescription: Control High Sodium: To replicate typical diet with high sodium contentForm of Administration: Dietary Modification: All foods provided, menu designed to achieve high sodium intakeDose: 150 mmol sodium/d in control dietNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRIntervention 2: Prescribed or synthetic diet (all food provided) with sodium quantifiedDescription: Control Intermediate Sodium: To replicate typical diet with intermediate sodium contentForm of Administration: Dietary Modification: All foods provided, menu designed to achieve intermediate sodium intakeDose: 100 mmol sodium/d in control dietNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRComparator: Prescribed or synthetic diet (all food provided) with sodium quantifiedDescription: Control Low Sodium: To replicate typical diet with low sodium contentForm of Administration: Dietary Modification: All foods provided, menu designed to achieve low sodium intakeDose: 50 mmol/dNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRIntervention 3: NRDescription: DASH High Sodium: To impose DASH diet with high sodium contentForm of Administration: Dietary Modification: All foods provided, menu designed to follow DASH with high sodium intakeDose: 150 mmol sodium/d in DASH dietNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRIntervention 4: Prescribed or synthetic diet (all food provided) with sodium quantifiedDescription: DASH intermediate Sodium: To impose DASH diet with intermediate sodium contentForm of Administration: Dietary Modification: All foods provided, menu designed to follow DASH with intermediate sodium intakeDose: 100 mmol/dNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRComparator: Prescribed or synthetic diet (all food provided) with sodium quantifiedDescription: DASH Low Sodium: To achieve DASH diet with low sodium contentForm of Administration: Dietary Modification: All foods provided, menu designed to follow DASH with low sodium intakeDose: 50 mmol/dNa/K ratio: NRMagnesium: NRCalcium: NROther Minerals: NRDuration: 4 periods of 30 days each, including run-inExposure to Follow Up Time: 0 months | Sodium measure: Chemical analysis of diet with intervention/exposure adherence measure, Single 24-hour urinary analysis without reported quality control measureBest sodium measure recorded: Single 24-hour urine analysis without validation measured at least 4 times, 4 weeks apart; chemical analysis of diet; Food diaries completed daily without validation;Sodium, Method of Validation: NR, Chemical analysis of diet with intervention/exposure adherence measureSodium Status Intervention 1: 141+/-55 mmol/dSodium Status Intervention 2: 106+/-44 mmol/dSodium Status Comparator: 64+/-37mmol/dSodium Status Intervention 3: 144+/-58 mmol/dSodium Status Intervention 4: 107+/-52 mmol/dPotassium measure: Single 24-hour urine analysis without validationBest potassium measure recorded: Single 24-hour urine analysis without validation measured at least 4 times, 4 weeks apart; chemical analysis of diet; Food diaries completed daily without validation;Potassium, Method of Validation: Adherence checks via food diaries, supervised mealsPotassium Status Intervention 1: 40+/-14 mmol/d Potassium Status Intervention 2: 41+/-14 mmol/d Potassium Status Comparator: 42+/-14 mmol/d Potassium Status Intervention 3: 75+/-27 mmol/d Potassium Status Intervention 4: 81+/-31 mmol/dHow was blood pressure measured? Random-zero sphygmomanometers, seated, 3 times during screening, weekly during 1st 3 weeks of intervention periods, and 5 times during last 9 days of intervention periods | Subgroup: NormotensiveDiastolic BPFollow-Up Time: 30 daysComparison: Intervention 3 vs Intervention 5MD -1.10 (95% CI: -2.00 - -0.10)Comparison: Intervention 1 vs ComparatorMD -2.80 (95% CI: -3.80 - -1.90)Systolic BPFollow-Up Time: 30 daysComparison: Intervention 3 vs Intervention 5MD -1.70 (95% CI: -3.10 - -0.30)Comparison: Intervention 1 vs ComparatorMD -5.60 (95% CI: -7.00 - -4.10) |