P22-038-24 Intake of Branched-Chain Amino Acids Is Associated With Higher Plasma BCAA Concentrations: An Analysis of Data From the PREMIER Study

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Objectives: Plasma levels of branched-chain amino acids (BCAA), specifically isoleucine, leucine, and valine, are directly associated with a higher risk of type 2 diabetes and cardiovascular diseases. However, it remains unclear whether reducing dietary BCAA intakes can substantially reduce plasma BCAA levels. Our objective is to examine the association between BCAA intakes and plasma BCAA levels.

Methods: We analyzed cross-sectional baseline data from 807 participants of the PREMIER trial who were US adults with pre-hypertension or stage 1 hypertension. Two 24-hour recall interviews were used to assess dietary intakes and nuclear magnetic resonance spectroscopy was used to measure plasma BCAA levels. Multivariable linear regression analysis was used to examine the association between BCAA intakes and BCAA plasma concentrations, adjusted for age, race, region, marital status, education and income level, body mass index, smoking, alcohol intake, total energy intake, and physical activity.

Results: Mean intakes (mg/kg/day) were 37.0 for isoleucine, 62.5 for leucine, and 41.1 for valine, exceeding dietary requirements. The mean plasma levels (μmol/L) were 63.1 for isoleucine, 147.3 for leucine, and 241.6 for valine. A 1mg/kg/day increment in BCAA intake was associated with a 0.20 (SE 0.06) μmol/L higher plasma BCAA level (P value < 0.001), isoleucine (β 0.10, SE 0.04, P value 0.01), leucine (β 0.15, SE 0.05, P value 0.002), and valine (β 0.36, SE 0.10, P value < 0.001) were associated with higher plasma levels of the specific BCAA.

Conclusions: BCAA intake was associated with substantially higher BCAA plasma concentrations in PREMIER study participants. Further investigation is being conducted to explore additional factors influencing plasma BCAA levels, including dietary patterns.

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P22-039-24 Mediterranean Diet Adherence and Cardio metabolic Risk Factors of 2,533 Chinese Middle-Aged Adults: Analysis of the WeWATCH Healthy Lifestyle Project

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Objectives: To examine the sex difference of Mediterranean diet adherence in Hong Kong middle-aged adults, and its association with cardiometabolic risk factors.

Methods: We have analyzed the baseline data of 2,553 middle-aged adults participated in a health promotion project, namely the WeWATCH Healthy Lifestyle Project. The adherence to Mediterranean diet (assessed by the 13-point Mediterranean Diet score [MDS]), demographics, lifestyle factors and medical history was self-reported, and the levels of body mass index [BMI], waist circumference [WC], waist-to-height ratio [WHtR], body fat %, fasting blood glucose and blood lipids, were examined by physical assessment. We compared the sex differences of MDS, and performed regression analysis to investigate whether a higher adherence to Mediterranean diet improves cardiometabolic risk factors.

Results: Female participants had a higher overall MDS and the higher rate of fulfilling individual MDS items than males, except for the consumption of olive oil, legumes, commercial sweets and confectionery. Higher MDS associated with the lower levels of adiposity indicators and blood pressure of all participants (β = -0.06 to -0.28), but the association was only significant among females when stratified by sex (β = -0.08 to -0.36). Higher MDS also associated with the lower odds of low HDL and elevated LDL among males (OR= 0.59 to 0.71), and the lower odds of elevated general and central obesity among females (OR= 0.76 to 0.78).

Conclusions: A higher adherence to Mediterranean diet improves obesity indicators and blood pressure particularly among female participants, which will be warranted in the prospective analysis.

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P22-040-24 Healthy Dietary Patterns, Longevity Genes, and Life Expectancy: A Prospective Cohort Study

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Objectives: Multiple healthy dietary patterns have been associated with mortality, while few studies have explored their associations with life expectancy. We aim to estimate the associations of dietary patterns with all-cause mortality and life expectancy and the modification of genetic risk on these associations.

Methods: This prospective study included 103,649 participants with two or more dietary assessments in the UK Biobank and free of cardiovascular diseases and cancer when completing the most recent dietary recall. We calculated five dietary scores: Alternate Healthy Eating Index-2010 (AHEI), Alternate Mediterranean Diet (AMED), healthful Plant-based Diet Index (hPDI), Dietary Approaches to Stop Hypertension (DASH), and Diabetes Risk Reduction Diet (DRRD). Cox proportional hazard models were used to estimate the hazard ratios (HR) and 95% confidential intervals (CI). Chiang's life table was used to estimate the life expectancy by quintiles of dietary scores.

Results: During a median follow-up of 10.6 years, 4314 total deaths were documented. Compared the highest quintile to the lowest, the multivariable-adjusted HRs (95% CIs) were 0.80 (0.73, 0.89) for AHEI, 0.80 (0.72, 0.88) for AMED, 0.82 (0.74, 0.92) for hPDI, 0.81 (0.73, 0.90) for DASH, and 0.76 (0.69, 0.84) for DRRD (all *P* for trend $< .0001$). Compared with the bottom quintile, the top quintile of dietary scores was associated with

longer life expectancy at age 45 years (life gain ranged from 1.7 [95% CI, 0.3–3.1] to 2.8 [95% CI, 1.5–4.1] years in man and 1.4 [95% CI, 0.4–2.4] to 2.3 [95% CI, 1.3–2.3] years in women). The life expectancy of participants with different dietary scores was not statistically significant across genetic susceptibility.

Conclusions: Greater adherence to healthy dietary patterns was associated with lower all-cause mortality and longer life expectancy regardless of genetic risk predisposition. Our findings suggest that multiple healthy dietary patterns are beneficial for extending life expectancy and can be adapted based on an individual's preferences and traditions.

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P22-041-24 Association Between Dietary Quality and Diurnal Salivary Cortisol in Hispanics/Latinos at Risk for Alzheimer's Disease

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Objectives: A relationship between an unhealthy diet, cognition, and biological stress as measured by cortisol may be found in the literature, however studies confirming these relationships in Hispanics/Latinos are lacking. The objective of this study was to examine the association between dietary quality and the diurnal cortisol slope in midlife Hispanic/Latino adults at risk for Alzheimer's disease (AD).

Methods: A cross-sectional data analysis from an observational longitudinal study was conducted on 47 adults at risk for AD. After obtaining informed consent, validated questionnaires on demographics were collected. Three 24-hour recalls were collected and used to calculate the Healthy Eating Index (HEI) 2015, a measure of diet quality. Salivary cortisol levels were measured at wake-up and bedtime using ELISA (Salimetrics LLC, Carlsbad, CA). Diurnal cortisol slope or the absolute change in cortisol from wake-up to bedtime divided by elapsed time was calculated. Linear regression models examined the relationship between diet quality and the diurnal cortisol slope while controlling for age, sex, and race.

Results: The mean age was 53.22 (SD=5.29) years, 93.62% were female, and 89.36% were White. The mean HEI score was 56.86 (SD=11.83) and mean daily cortisol level was 0.40 (SD=0.36) μg/dL. Total HEI score and the diurnal cortisol slope was not significantly associated. (β=-3.034 x 10-6, SE=3.040 x 10-6, p=0.324) The combined HEI moderation components (refined grains, sodium, added sugars and saturated fats) as a variable was significantly associated with the diurnal cortisol slope (β=-1.448 x 10-5, SE=7.071 x 10-6, p=0.047). The combined adequacy components of HEI (total fruits, whole fruits, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins and fatty acids) were not significantly associated with the diurnal cortisol slope (p=0.540).

Conclusions: The dietary elements or moderation components of the HEI that increase the risk of chronic diseases, if consumed in excess, seem to drive the relationship between diet quality and the diurnal cortisol slope. Additional research is needed to observe this relationship over time, especially in Hispanics/Latinos as they are at greater risk for AD than non-Hispanic White populations.

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P22-042-24 Does Consumption of Energy Drinks Affect Sleep of Graduate Healthcare Students?

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Objectives: Graduate students in healthcare professions rely on energy drinks to study longer hours. This study investigated a correlation between habitual consumption of energy drinks and sleep duration. In addition, preferred energy drink brands, reasons for consumption, awareness of ingredients, and experience of side effects were examined.

Methods: Of the 329 eligible didactic students in the physician assistant, physical therapy, and occupational therapy programs at Touro University Nevada, 126 volunteers (70% female) completed an electronic, anonymous survey (38% response rate) in August 2023. Participants reported frequency, amount and brand of energy drinks consumed, reasons for consumption, awareness of ingredients, adverse effects, and hours and quality (good, average, or poor) of sleep in the past 30 days. Responses were summarized using descriptive statistics. The association between energy drink consumption and duration of sleep was assessed using Pearson correlation. Consumption and sleep duration were compared based on quality of sleep using one-way ANOVA.

Results: Regular users (46%) consumed energy drinks in a range of once a week to multiple times a day, whereas 43% consumed less than once a month or never. The most popular energy drink was Celsius (used by 49%). The top reasons for consumption were to improve mental alertness (62%), stay awake while studying (57%), and taste (52%). When consumed, 85% limited their intake to 6-12 ounces per day. The awareness of ingredients was high for caffeine (89%) and sugar (84%) but not for other ingredients such as L-Carnitine (48%) or ginseng (38%). Most frequent side effects were heart palpitations (48%) and anxiety (43%). Participants slept on average 6.8 $\pm$ 1.0 hours a night. Consumption did not correlate with sleep duration and did not vary by quality of sleep. However, sleep duration differed between sleep quality groups ($p < 0.001$): students with poor sleep received about one hour less sleep than students with good sleep.

Conclusions: Although students used energy drinks to stay alert and prolong their studying hours, most consumed moderate amounts which may explain the lack of association between consumption and sleep duration. Low awareness of certain ingredients and high frequency of reported side effects are concerning.

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