P51 (continued)

was found for exclusive breastfeeding between preterm and term infants at any point, 0-5 months; a significant difference at 6 months (40.0% vs 22.7%), χ^2 (1, $n = 531$) = 7.4, $P < 0.01$) was found. No differences in providing any breast-milk at any point were found. A significant difference in maternal medications, χ^2 (1, $n = 531$) = 6.1, $P = 0.04$ and multiple births, χ^2 (1, $n = 531$) = 11.5, $P = 0.03$ influencing cessation was found for both groups. Preterm infants more often participated in WIC; receiving breastfeeding education before giving birth resulted in higher breastfeeding rates at 6 and 12 months.

Conclusion: Differences exist in exclusive breastfeeding rates between preterm and term infants at 6 months. Maternal medications and multiple births may influence early breastfeeding cessation. Participation in WIC may positively influence breastfeeding duration. Research is needed to confirm findings in a more diverse sample.

Funding: None.

P52 Analysis of Energy Intake at Breakfast and Physical Activity in College Students Yields the Ideal Breakfast Size

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Background: Skipping breakfast in young adults is a growing nutritional problem in Japan that results in lower energy expenditure in the morning.

Objective: We examined the relationship between energy intake at breakfast and physical activity to determine the ideal breakfast size (in kcal).

Study Design, Settings, Participants: A cross-sectional study of twenty healthy undergraduate student volunteers (5 males and 15 females) recruited from Shukutoku University, Japan.

Measurable Outcome/Analysis: We assessed dietary intake over the course of 7 consecutive days using the dietary recall method. We calculated energy/nutrition intake using standard tables of food composition in Japan. After excluding days of self-reported unusual dietary consumption, the remaining 133 days were analyzed. Intensity of physical activity and step counts were measured with a Polar V800 accelerometer. When recorded activity was 2.0 METs (standing intensity) or higher, it was regarded as "active time." A breakfast-skipping day was defined as no-energy intake before 10:00 am. Data were analyzed with unpaired *t* tests and regression analyses.

Results: Active time and step count were significantly lower on days when breakfast was skipped ($n = 38/133$) than when

it was not (active time: 187.6 vs 267.1 min/day, $P < 0.005$; step count: 6,283 vs 9,458 steps/day, $P < 0.005$). Linear regression showed a significant positive correlation between energy intake at breakfast and active time. An inverted U-shaped quadratic curve was a better fit than a straight line. The resulting regression formula indicated that an energy intake of 526 kcal would yield the longest active time.

Conclusion: Our study suggests that too little breakfast, as well as too much breakfast, can lead college students to be less physically active. Knowing the ideal morning energy intake and the effects of skipping breakfast can help design more effective nutrition education and maybe reduce breakfast-skipping habits in young adults.

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P53 Contribution of Plant-Based and Animal-Based Sources to Protein Foods Intakes Among US Adults by Sex and Age

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Background: Recent focus of dietary recommendations has greater emphasis of reliance on plant-based proteins. Before applying broad recommendations, it is important to assess current consumption patterns of plant-based and animal-based protein sources among the US population.

Objective: To identify the proportion of US adults who consumed protein types, and their contributions to overall protein source intakes among US adults by sex and age.

Study Design, Setting, Participants: This cross-sectional study examined 24-hour dietary recall data for 35,309 participants from 2005-2018 NHANES. Participants were stratified by sex and age category (20-35, 36-50, 51-70, 71+ years).

Measurable Outcome/Analysis: Dietary data from the day of intake were used to estimate intakes from protein sources using the Food Patterns Equivalents Database (FPED). Mean intakes of ounce equivalents were generated for FPED protein food categories, aggregated to identify the proportions of protein food sources. Data were weighted to produce nationally representative means and 95% confidence intervals.

Results: On the day of intake, 93% of all participants consumed meat, poultry, or seafood. More adults in the older age groups consumed eggs, nuts/seeds, and seafood high in n-3 fatty acids; whereas, fewer adults in the older age groups consumed meat, poultry, legumes, and soy. On the day of intake, males consumed greater quantities of all protein food categories than all strata. At least 70% of the day's protein food intakes were consumed from meat, poultry, or seafood for all groups. While the proportion of eggs were consistent across all groups, meat, poultry, and seafood ratios decreased across age categories whereas plant protein ratios increased.

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