

representative sample of 1540 adults from the Lower Mississippi Delta region of Arkansas, Louisiana, and Mississippi were interviewed by telephone from January to June, 2000. Measures included the USDA Food Security Module, the SF12, a self reported measure of physical and mental health status, and one self rating of general health. Adults in food insecure households were significantly more likely to rate their health as poor/fair, and scored significantly lower on the physical and mental health scales of the SF12. These relationships remained when stratified by income and ethnicity. Food insecure respondents with household income of <\$30,000 were twice as likely to report poor health than food secure respondents. In regression models controlling for income level and ethnicity, food insecurity was significantly associated with fair/poor health rating and lower scores on physical and mental scales of SF12. Food insecurity is independently associated with poorer self reported health status of adults in this representative, rural, high risk sample. Supported by ARS/USDA Project #6251-53000-003-00D.

## 187.16

### Weekly frequency of consuming commercially prepared meals by adult Americans: 1987-2000: Predictors and correlates

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We determined the number of commercially prepared meals (CPM) per week reported by adult Americans using data from the National Health Interview Survey (NHIS) 1987 (n=21731), NHIS 1992 (n=11718), and the National Health and Nutrition Examination Survey (NHANES) 1999-2000 (n=5330). The questions used to elicit information on CPM intake were similar in the two NHISs, but not in the NHANES. The mean reported number of CPM/week was 2.5 in 1987/1992, and 2.8 in 1999-2000. In 1987, approximately 28% of the population reported 0 or <1 commercially prepared meal, decreasing to 24% in 1999-2000. However, the proportion of the population reporting three or more commercial meals increased from 36% in 1987 to 41% in 1999-2000. Age, gender, race, education, income, region of the country, metropolitan area of residence, living arrangement, major activity, and self-reported health status were significant independent predictors in both 1987 and 1992. In 1999-2000, age, gender, race/ethnicity, education, type of work, and self-reported health status were significant independent predictors. Self-reported body mass index and frequency of CPM reporting were unrelated in all three surveys (p>0.05). The reported number of weekly commercially prepared meals was positively associated with intakes of energy and percentage of energy from saturated fat, but was inversely associated with percentage of energy from carbohydrate, estimated from food frequency questionnaires used in 1987 and 1992.

## OSTEOPOROSIS AND BONE HEALTH (188.1-188.17)

## 188.1

### Survey of Baton Rouge/New Orleans physicians who treat osteoporosis

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400 multiple-choice questionnaires of 16 questions were sent to physicians who treat osteoporosis patients in major hospitals and clinics of the areas of Baton Rouge (79%) and New Orleans (31%). 101 completed questionnaires were returned. For osteoporosis prevention, 98% recommended high calcium diet and exercise; 75% recommended no alcohol and smoking. Primary indicators of osteoporosis were fracture (90%), loss of height (88%), back curvature (84%), family history (83%), and smoking (80%). While DEXA scans were recommended for detecting osteoporosis before fractures (90%), only 29% recommended DEXA for all women over 65. No physicians recommended diet/supplements as the sole treatment for osteoporosis

but 69% included diet/supplements in their combination treatment. The most commonly recommended treatment was the combination of diet/supplements + exercise + biphosphonates (44%) with some adding hormone replacement therapy or calcitonin to this combination. 95% of the physicians recommended exercise: walking (85%), resistance (51%), swimming (33%), running (20%), and non-weight bearing (19%). Patients' age ranged from newborn to 106; 54% were Caucasian; 38% were African American, and 7% were other. The areas mostly affected were spine (62%) and hip (35%). Physicians' approach to osteoporosis treatment was variable; diagnosis was different from the National Osteoporosis Foundation guidelines.

## 188.2

### Predictors of bone mineral content and density in black and white adolescents

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To study predictors of whole body bone mineral content (BMC) and density (BMD) in adolescent black and white girls, we performed a cross-sectional analysis of 132 healthy adolescents, aged 11-15 years (72 whites, 60 blacks). The variables studied were ethnicity, age, weight, height, postmenarcheal age (PMA), body mass index (BMI), Tanner Score, energy and protein intakes, estimated electrolyte intakes from dietary recalls, serum electrolytes, and biochemical markers of bone turnover. Whole body BMC and BMD were measured by dual energy X-ray absorptiometry. Age was  $12.4 \pm 1$  and  $12.9 \pm 1.2$  y (p<0.05), PMA was  $9.3 \pm 14.7$  and  $6.9 \pm 14$  months, and weight was  $54 \pm 12$  and  $56 \pm 16$  kg, in blacks and whites, respectively. Age, PMA, Tanner Score, weight, height, BMI were significantly correlated with total BMD and BMC in whites and blacks (p<0.05). In addition, energy, protein, sodium, and potassium intakes, but not calcium intake, were significantly correlated with BMD and BMC in whites and blacks (p<0.05). Of the bone biomarkers, serum bone alkaline phosphatase and urinary N-telopeptide excretion were significantly correlated to both BMD and BMC in blacks and whites (p<0.05) and osteocalcin levels with BMD and BMC in blacks only (p<0.01). Serum Mg and BMD were correlated in blacks (p<0.05). In conclusion, the predictors of total BMC and BMD were similar between the black and white girls, despite higher BMD and BMC in black compared to white adolescent girls

## 188.3

### Effect of citrate:malate molar ratio on calcium absorption from calcium citrate malate

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Calcium citrate malate (CCM, trademark FruitCal®) is a proprietary combination of calcium with citric and malic acids used to fortify certain fruit juices. Due to differences in manufacturing formulas and the endogenous citric and malic acids in juice, CCM fortified juices can have varying citrate:malate molar ratios (MR). To assess the impact of MR on calcium absorption (CA) we compared 5 different CCM compositions comprising a 3-fold range in MR from 154 previous studies. All calcium test loads (250 mg) were intrinsically labeled with calcium tracer and consumed as tablets or juice by adolescents age 9-17 yrs (grp1), women age 20-30 yrs (grp2), and/or women age 40-77 yrs (grp3). We found no difference in mean %CA due to vehicle (tablets 37.7, juice 38.9), age group (grp1 37.9, grp2 37.8, grp3 39.0), or MR (lowest to highest MR yielded %CA of 42.0, 38.8, 36.2, 36.0, 38.3). CA from CCM was compared to literature values for other calcium sources by indexing to an equimolar calcium dose of milk to permit cross study comparisons (CA index for milk set at 100). CA index values showed that CCM (138) consistently exceeded that of milk and other dairy products (86-100), common calcium salts used as supplements and to fortify foods (86-93), calcium fortified soymilk (77), and a number of vegetable sources of calcium (18-103). These data show CCM with varying MR provides highly absorbable calcium across a range of conditions.