**The Disconnect Between Cancer Prevention Recommendations and Dietary Practices by Obesity Status**

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**ABSTRACT**

Cancer risk has been linked to obesity, thus it is important to understand differences in adherence to evidence-based cancer prevention recommendations to ameliorate elevated risk. We examined data from 26,980 adults (>19 years) from 1999-2010 National Health and Nutrition Examination Survey (NHANES) to assess how closely Americans achieved American Institute for Cancer Research (AICR) guidelines for cancer prevention by obesity status. Participants provided 24-hr dietary recall data during mobile examination center (MEC) visits. Dietary intakes were recoded to assess the specific AICR cancer prevention guidelines. Analyses of guideline compliance was conducted for the total sample as well as stratified by body mass index (BMI) and central obesity (waist circumference >88 cm female; >102 cm male). Despite consuming significantly lower energy (P=0.017), obese adults consumed significantly more energy-dense diets (P<0.001) and were significantly less likely to meet fruit intake recommendations (P=0.001). Those without central obesity obtained significantly more energy from added sugars in beverages (P<0.001). Obese adults were significantly less likely to meet red and processed meat recommendations (P<0.001). There were no significant differences in the percent of grains as whole grains or proportion meeting whole grain recommendation by obesity; however, all groups were below 5% meeting this AICR cancer prevention recommendation. The accumulating scientific evidence regarding dietary risk factors for cancer is being translated into public health recommendations, yet our data indicate that obese adults may carry additional risks beyond excess weight as a result of dietary patterns. Successful interventions for cancer prevention must address these dietary gaps to effectively reduce the cancer burden in the U.S.

**METHODS**

- Data obtained from NHANES 1999-2010 for adults >19 years (n=26,980)
  - NHANES oversampled African American, Mexican American, low-income and the elderly
  - In-home interviews conducted to consent individuals
  - Mobile examination center visits were used to collect biometric measures
  - Data were analyzed to represent a nationally-representative sample
- Dietary intakes were assessed using a multiple pass 24-hr recall process
  - Nutrient intakes estimated by USDA using FNDDS 5.0
  - Food groups intakes and discretionary calories computed from MPED-v2.0, a CNPP addendum and a manual computation of remaining missing foods from 2007-2010
- Obesity status was determined using BMI data from measured height and weight
  - BMI was recoded into Normal Weight (18.5-24.9), Overweight (25-29.9) and Obese (≥30)
  - Due to focus on obesity and small sample size, Underweight (<18.5) were excluded from the analyses
  - Waist circumference was recoded into Central Obesity and No Central Obesity and is gender-specific
  - Central obesity was defined as having a waist circumference >88 cm for women and >102 cm for men
  - Dietary intakes were compared to AICR cancer prevention guidelines
    - Adults were coded for meeting specific cancer prevention guidelines
    - Comparisons across weight status were tested using Chi Square analyses to assess compounded risk for cancer by the presence or absence of obesity
  - Data were analyzed using SPSS Complex Samples (v19) to produce nationally-representative estimates but sample-based standard errors

**CONCORDANCE WITH AICR RECOMMENDATIONS**

**REFERENCES**

Further utilization of the NHANES dataset to determine to what extent AICR guidelines are being met by U.S. adults for the following:

- Physical activity patterns
- Specific dietary supplement use
- Breathing practices
- Smoking and tobacco use
- Cancer survivorship

**FUTURE DIRECTIONS**

- Recommendations for Cancer Prevention AICR: http://preventcancer.aicr.org/site/PageServer?pagename=rec ommendations_home

**BACKGROUND**

The prevalence and incidence of chronic disease is a major worldwide health issue and concern. Cancer is one of the most widespread diseases and has the 2nd greatest mortality rate, surpassed only by heart disease. Currently, one-third of cancer deaths that occur each year in the United States are attributable to diet, physical activity, and obesity.

**BEVERAGE CONSUMPTION**

- **Juice**
  - Whole Milk (%)
  - Low Fat Milk (%)
  - Whole Milk (%)
  - Low Fat Milk (%)

- **Soda**
  - Drank <1 or 2 Alcoholic Drinks/d

- **Drinking Water**
  - OBESITY status was determined using BMI data from measured height and weight

- **Juice**
  - Central Obesity (n=14,654)
  - Normal Weight (n=7,868)
  - Obese (n=9,514)
  - Central obesity was defined as having a waist circumference >88 cm for women and >102 cm for men
  - Dietary intakes were compared to AICR cancer prevention guidelines
  - Adults were coded for meeting specific cancer prevention guidelines
  - Comparisons across weight status were tested using Chi Square analyses to assess compounded risk for cancer by the presence or absence of obesity
  - Data were analyzed using SPSS Complex Samples (v19) to produce nationally-representative estimates but sample-based standard errors

**CONCLUSIONS**

- Despite strong scientific consensus linking a healthy diet to reduced cancer risk, a colossal discrepancy remains between cancer prevention guidelines and actual dietary intakes among U.S. adults by obesity category.
- Identification of current patterns and behaviors is a key starting point for widespread development, implementation, and subsequent evaluation of public health initiatives aimed at assessing exposures over time.
- Policy makers must align with cancer researchers, educators and clinicians to identify and encourage practical dietary recommendations that can be implemented and monitored.