



Short Communication

Fast food consumption is associated with higher education in women, but not men, among older adults in urban safety-net clinics: A cross-sectional survey

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ABSTRACT

Fast food consumption is linked to poor health, yet many older adults regularly consume fast food. Understanding factors contributing to fast food consumption is useful in the development of targeted interventions. The aim of this study was to characterize how fast food consumption relates to socio-demographic characteristics in a low-income sample of older adults.

This study used cross-sectional survey data of 50 to 79-year-olds (N=236) in urban safety-net clinics in 2010 in Kansas City, KS. Self-reported frequency of fast food consumption was modeled using ordinal logistic regression with socio-demographics as predictor variables. Participants were 56.8 ± 6.0 (mean \pm SD) years old, 64% female, 45% non-Hispanic African American, and 26% Hispanic. Thirty-nine percent denied eating fast food in the past week, 36% ate once, and 25% ate fast food at least twice. Age was negatively correlated with fast food intake ($r = -0.20$, $P = 0.003$). After adjusting for age, race-ethnicity, employment, and marital status, the association between education and fast food consumption differed by sex ($P_{\text{interaction}} = 0.017$). Among women, higher education was associated with greater fast food intake (Spearman's correlation; $r = 0.28$, $P = 0.0005$); the association was not significant in men ($r = -0.14$, $P = 0.21$). In this diverse, low-income population, high educational attainment (college graduate or higher) related to greater fast food intake among women but not men. Exploration of the factors contributing to this difference could inform interventions to curb fast food consumption or encourage healthy fast food choices among low-income, older adults.

1. Introduction

Good nutrition is important for older adults (Bernstein and Munoz, 2012). Eating fast food makes it harder to maintain a healthy diet (Moore et al., 2009). Fast food intake is associated with greater body mass index (Bowman and Vinyard, 2004), adult weight gain (Pereira et al., 2005), the development of insulin resistance (Pereira et al., 2005), and increased mortality risk (Barrington and White, 2016); therefore, the rise of fast food consumption in the U.S. and around the world (Bowman and Vinyard, 2004) is a public health concern.

Previous research has identified major risk factors for eating fast

food. Living near fast food outlets is associated with greater consumption (Moore et al., 2009). In a nationally representative sample of U.S. adults, fast food consumption was associated with higher household income, African American racial-ethnic identity, and younger age (Bowman and Vinyard, 2004). Among high consumers, the most commonly cited reasons for eating fast food are convenience and taste (Rydell et al., 2008). However, in reports describing risk factors for fast food consumption (Bowman and Vinyard, 2004; French et al., 2000; Moore et al., 2009; Pereira et al., 2005; Rydell et al., 2008; Satia et al., 2004), there has been scant attention to how sex may influence associations with fast food consumption.

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Women eat differently from men in part because women tend to believe that healthy eating is more important (Wardle et al., 2004). A qualitative study of older adults found that barriers to healthy eating differ for men and women; men struggle with taste preferences, convenience of fast food, and a lack of self-control, while women found the greatest difficulty in cooking healthy meals (Wu et al., 2009). Identifying sex differences in reasons for consuming fast food would be valuable for the development of targeted interventions.

Hence, we sought to characterize how fast food consumption relates to socio-demographic characteristics in a sample of low-income, older adults.

2. Materials and methods

The aim of this study was to characterize how fast food consumption relates to socio-demographic characteristics in a low-income sample of older adults. Electronic surveys were administered to 236 adults aged 50–79 years in safety-net clinics in the Kansas City metropolitan area. Self-reported frequency of fast food consumption was modeled using ordinal logistic regression with socio-demographics as predictor variables.

2.1. Recruitment

Participants were recruited from nine safety-net clinics in the Kansas City metropolitan area. Study staff screened participants for eligibility and obtained informed consent, which was approved by University of Kansas Medical Center's Institutional Review Board. Eligibility criteria included age ≥ 50 years, income $\leq 150\%$ of the Federal Poverty Level, current home address and working phone, no family history of colorectal cancer < 60 years, and not up to date with colorectal cancer screening. The participants of this study include the 236 individuals who were randomized to the Comparison group in a randomized controlled trial of a touchscreen intervention of “implementation intentions” (a stage-theory-framed model of health behavior change) with a primary outcome of colorectal cancer screening completion. The comparison group completed a health survey, including information about fast food intake, that was time-matched to the touchscreen intervention. More detail about the parent study is available elsewhere (Greiner et al., 2014).

2.2. Data collection and variable coding

Participants answered questions on a touchscreen computer in the waiting area of the safety net clinic before their scheduled appointment. The content was presented in English or Spanish.

Age was measured in years. Participants were classified by their self-reported, combined race and ethnicity as non-Hispanic African American, non-Hispanic White, Hispanic, and non-Hispanic Other.

Employment status was consolidated into a categorical variable with three levels: employed (full-time and part-time), home by choice (homemaker and retired), and unemployed (unemployed, disability/unable to work, seasonal, and other).

Marital status was consolidated into a dichotomous variable (partner versus no partner), conveying whether the person had a romantic partner: married and living with partner were included in the partner variable while the no partner variable included those indicating divorced/separated, widowed, never married, and other.

Education was consolidated into four levels (less than high school completion, high school completion or GED, some college or technical school degree, and at least college graduate). Participants were also asked if they had health insurance.

Fast food consumption was measured with the following question: “During the past week, on how many times did you eat fast food from restaurants like McDonald's, Pizza Hut, KFC, Taco Bell, or from convenience stores like Casey's or Kwik Shop?” Participants could respond

with “None,” “One,” “2–3,” or “4 or more.” Fast food consumption frequency was consolidated from four to three levels, because only seven participants (2.9%) reported frequenting a fast food outlet four or more times in the past week.

2.3. Statistical approach

Associations with the dependent variable, fast food intake, were analyzed using ordinal logistic regression modeling (Brant, 1990) using JMP version 13.0 (SAS Institute). Independent variables included age, race-ethnicity, employment, marital status, education, sex, and a two-way interaction term between sex and each of the independent variables. Using a threshold of $P < 0.05$ as statistically significant, each two-way interaction term was tested with inclusion of all other covariates. The strength of association between an independent variable and fast food consumption is conveyed by Spearman's correlation.

Several sensitivity analyses were performed to assess the dependence of significant findings on the chosen statistical approach. First, other covariates were removed to assess if adjustment for confounders was responsible for statistical significance. Next each consolidation scheme (employment, marital status, education level, and fast food intake) was tested by individually replacing the variable with its raw counterpart. Finally, fast food intake was modeled as a continuous variable using linear regression.

3. Results

Participants were 56.8 ± 6.0 (mean \pm SD) years old. The mean age in years was 57.2 ± 6.5 for women and 56.2 ± 4.9 for men (mean \pm SD). The age distribution was skewed toward the lower end of the eligible range. Table 1 summarizes participant characteristics. A majority reported membership to a racial-ethnic minority. Low educational attainment, high unemployment, and common lack of health insurance indicate the economic vulnerability of the study population. Men and women had significantly different distributions of employment status; however, men and women were comparable on all other reported measures.

In the fully-adjusted model, the association between education and fast food consumption differed by sex ($P_{\text{interaction}} = 0.017$); in this model, the only other significant predictor of fast food intake was age ($P = 0.023$). Among women, higher education was associated with greater fast food intake (Spearman's correlation; $r = 0.28$, $P = 0.0005$), while the association was not significant in men ($r = -0.14$, $P = 0.21$) (Fig. 1). Without inclusion of other covariates, age negatively correlated with fast food intake ($r = -0.20$, $P = 0.003$) (not shown).

Sensitivity analyses showed that statistical significance of the two-way interaction was not contingent on inclusion of covariates ($P = 0.0023$) or variable consolidation schemes (all $P < 0.05$). Additionally, a similar result was obtained when modeling fast food intake as a continuous variable ($P = 0.024$). We performed one final analysis stratified by employment status out of theoretical concern that this variable was confounding our main observation; this revealed that the interaction term between education and sex was strongest among those employed ($P = 0.0035$) and absent among those home by choice ($P = 0.64$) and unemployed ($P = 0.37$).

4. Discussion

This is the first report of a significant interaction between sex, education, and fast food consumption. Higher education was correlated with greater frequency of fast food intake among women, but not men. The interaction was statistically independent of important covariates. Stratified analysis showed that the interaction was chiefly coming from the older adults who were regularly working outside of the home. Also, in our sample of older adults, we corroborated the observation that younger people tend to eat fast food more frequently.

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