

The Relationship between Social Support and Diet Quality in Middle-Aged and Older Adults in the United States



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ABSTRACT

Background Social support has been associated with physical and mental health; however, the relationship between social support and diet quality is not well understood.

Objective The purpose of this research was to assess the relationship between social support and overall diet quality among US adults.

Design/participants This study was a secondary analysis of data from adults aged 40 years and older who participated in the cross-sectional 2007-2008 National Health and Nutrition Examination Survey (N=3,243).

Main outcome measures Social support was determined by a modification of the Rees Social Support Index (SSI), which is the sum of five dichotomized variables addressing emotional support, financial support, marital status, close friends, and religious service attendance. Overall diet quality was measured by the Healthy Eating Index-2010 (HEI-2010) and calculated from the mean of two 24-hour dietary recalls.

Statistical analyses performed SAS survey procedures were used to incorporate the appropriate sample design weights. Unweighted frequencies are reported along with weighted means and standard errors (SE). Multivariable linear regression was used to compare the total HEI-2010 scores among the six SSI groups with additional models controlling for sex, age, race/ethnicity, income level, and education level, and stratifying by sex.

Results In an unadjusted model, the mean total HEI-2010 score for those with an SSI score of 0 (n=37) was 50.0 (SE=2.83) compared to 57.1 (SE=0.89) for those with SSI score of 5 (n=676) ($P<0.0001$). The results were no longer statistically significant when adjusted for age, sex, race/ethnicity, income, and education level ($P=0.14$). However, when stratified by sex and adjusted for other demographics, higher SSI scores were associated with higher HEI-2010 scores compared to lower SSI scores in men ($P=0.02$), but there was no significant difference among SSI scores and HEI-2010 scores in women ($P=0.43$).

Conclusions This study suggests a positive relationship between social support and overall diet quality among middle-aged and older men, but not women, in the United States.

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IMPROVEMENT OF DIET QUALITY IS PART OF A PUBLIC health strategy for health promotion, weight control, and prevention of diseases such as cardiovascular disease, high blood pressure, type 2 diabetes, and some cancers.¹ The Dietary Guidelines for Americans (DGA) were first released in 1980 and are updated every 5 years, with the most recent report of the 2015-2020 DGA, which concentrates on an overall healthy eating pattern.¹ A joint effort by the US Department of Agriculture and the Department of Health and Human Services, the DGA provide recommendations for Americans aged 2 years and older regarding food choices and physical activity to promote health and reduce the risk of chronic diseases.¹ A US Department of Agriculture

and National Cancer Institute collaborative—the Healthy Eating Index (HEI)—is a measure of diet quality in relation to federal dietary guidance.² Diet quality as established by the 2010 DGA is represented in the HEI-2010.² The HEI-2010 assesses foods and beverages as a total eating pattern. It is comprised of nine adequacy components (total fruit, whole fruit, total vegetables, greens and beans, whole grains, dairy, total protein foods, seafood and plant proteins, and fatty acids) and three moderation components (refined grains, sodium, and empty calories). Higher intakes for the adequacy components results in higher scores and higher intakes of the moderation components results in lower scores. Additional details of the scoring system have been described elsewhere.²

Social support is associated with physical and mental health, and studies have linked social support to aspects of diet.³⁻⁸ Social support can be measured objectively by marital status, contacts with friends and relatives, religious membership and group associations, as well as subjectively through perceived emotional support and feelings of social isolation.^{9,10} Social support has been measured using various questionnaires and tools.⁴⁻¹⁶ Social relationships can promote or negatively impact health behaviors. For example, they can promote or discourage physical activity, they can promote better dietary choices or poorer ones, and they can promote or discourage drug abuse and violence.³ Social behaviors can influence individual pathways for health through physiological stress responses, psychological factors, and lifestyle health behaviors.³

Research has assessed social support and diet quality separately, but the association between social support and diet quality is not well understood. The purpose of this study was to assess the relationship between social support (as measured by a modification of the Rees Social Support Index [SSI]¹⁵) and diet quality (as measured by the HEI-2010²) utilizing a US nationally representative sample. The authors hypothesized that among adults aged 40 years and older in the United States, there is a positive relationship between social support and diet quality when adjusted for age, sex, race/ethnicity, income, and education.

METHODS

Study Sample

The National Health and Nutrition Examination Survey (NHANES) is a cross-sectional continuous series of surveys intended to assess the health and nutritional status of adults and children in the United States.¹⁷ NHANES uses a multi-stage probability sample design to represent the civilian non-institutionalized US population.¹⁸ Interviews are conducted in participants' homes, and health measurements are performed in mobile centers throughout the country.¹⁷

The current study included those who had complete data for the variables of interest in the 2007-2008 NHANES, the most recent cycle that included a social support questionnaire. The eligibility age for the NHANES social support questionnaire was age 40 years and older.¹⁹ Therefore, the current study was limited to adults aged 40 years.¹⁹ Participants were excluded if they were missing information on demographic characteristics that can influence social support and diet quality (ie, age, sex, race/ethnicity, income, or education); did not have 2 days of reliable dietary intake data; or did not have at least one component of the SSI—which resulted in the sample size of 3,243. The protocol was submitted to the Rutgers Biomedical and Health Sciences Institutional Review Board and deemed exempt from review.

Diet Quality

The HEI-2010 was calculated from the average of the two 24-hour dietary recalls.²⁰ The publically available 2007-2008 NHANES SAS code and the Food Patterns Equivalents Database were used for calculations.^{21,22} The fatty acid component is the ratio of unsaturated fatty acids to saturated fatty acids and the empty calories component is expressed as the

percentage of energy, and the remaining HEI components are expressed per 1,000 calories.^{2,23} The values were compared proportionately to the appropriate standard for scoring.^{2,24} The total score is the sum of the component scores and has a maximum value of 100 points.²³

Social Support

Five dichotomous social support variables, described here, were combined to create a modified SSI comparable to Rees and colleagues' index.^{15,16} Rees and colleagues' index is similar to the index used by Ford and colleagues¹⁶ for NHANES III, which is based on the index developed by Berkman and Syme.⁹ These indices have consistently demonstrated construct and predictive validity.^{9,16,25} The five components of social support included emotional support, extra financial support, marital status, number of close friends, and frequency of attending religious services.¹⁹ Rees and colleagues' SSI included responses answered as "yes" or "no."¹⁵ In this study, responses of "refused" and "don't know" were recoded as "missing" because these responses could not be interpreted as either having or missing social support. The first variable was related to having emotional support ("Can you count on anyone to provide you with emotional support, such as talking over problems or helping you make a difficult decision?"), and the second was related to having extra financial support available ("If you need some extra help financially, could you count on anyone to help you; for example, by paying any bills, housing costs, hospital visits, or providing you with food or clothes?").¹⁹ If respondents answered, "doesn't need help" or "offered help but wouldn't accept it" for the emotional and financial support questions, respectively, the response was recoded as "no" because these were interpreted as not having support. Marital status was dichotomized as married or living as married compared to not married to be consistent with Rees and colleagues¹⁵ and Ford and colleagues.¹⁶ Religious service attendance was dichotomized as attending 4 or more days per year or fewer.^{15,16} The number of friends was dichotomized as having four or more friends or fewer to be consistent with Rees and colleagues¹⁵ and Gironde and colleagues.¹³ The sum of the five SSI variables ranged from 0 to 5, which is the same as the SSI of Rees and colleagues.¹⁵

Demographics

Demographic characteristics that may influence social support and diet quality were age, sex, race/ethnicity, income, and education. Age was recoded into categories of 40 to 49, 50 to 59, 60 to 69, 70 to 79, and 80 years and older for analysis.^{11,25,26} Mexican Americans and other Hispanics were recoded together in the race/ethnicity category; other categories were non-Hispanic white, non-Hispanic black, and other race.^{13,15,27} Sex was listed as men and women.²⁸ Family income, expressed as the ratio of family income to the poverty threshold, was recoded into categories of <1.30, 1.30 to 2.99, 3.00 to 4.99, and ≥5.00.²⁷ Nine percent of the analytic sample was missing data about income. Education level was recoded to less than high school graduate, high school graduate, some college, and college graduate or above. Responses of "refused" and "don't know" were recoded to "missing" because these responses could not be interpreted as either having or missing social support.

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