Differences in Psychosocial and Behavioral Variables by Dietary Screening Tool Risk Category in Older Adults

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ARTICLE INFORMATION

Article history:
Submitted 7 September 2016
Accepted 27 June 2017
Available online 17 August 2017

Keywords:
Exercise
Diet
Health promotion
Older adults
Dietary screening

http://dx.doi.org/10.1016/j.jand.2017.06.365

ABSTRACT

Background The Dietary Screening Tool (DST) has been validated as a dietary screening instrument for older adults defining three categories of potential nutritional risk based on DST score cutoffs. Previous research has found that older adults classified as being "at risk" differed from those categorized as being "not at risk" for a limited number of health-related variables. The relationship between risk categories and a wide variety of variables has not yet been explored. This research will contribute to an increased understanding of clustering of multiple health concerns in this population.

Objective The aim of this study was to determine whether DST risk categories differed by demographic, anthropometric, cognitive, functional, psychosocial, or behavioral variables in older adults.

Design This study utilized a cross-sectional design with data collected from September 15, 2009 to July 31, 2012. Participants completed an interviewer-administered survey including the DST and other measures.

Participants/setting Community-dwelling older adults (n=255) participating in the Study of Exercise and Nutrition in Older Rhode Islanders Project were included if they met study inclusion criteria (complete DST data with depression and cognitive status scores above cutoffs).

Main outcome measures DST scores were used to classify participants' dietary risk (at risk, possible risk, and not at risk).

Statistical analyses performed Multiple analysis of variance and χ^2 analyses examined whether DST risk categories differed by variables. Significant predictors were entered into a logistic regression equation predicting at-risk compared to other risk categories combined.

Results Participants' mean age was 82.5±4.9 years. Nearly half (49%, n=125) were classified as being at possible risk, with the remainder 26% (n=66) not at risk and at risk 25% (n=64). At-risk participants were less likely to be in the Action/Maintenance Stages of Change ($P<0.01$). There was a multivariate effect of risk category ($P<0.01$). At-risk participants had a lower intake of fruits and vegetables, fruit and vegetable self-efficacy, satisfaction with life, and resilience, as well as higher Geriatric Depression Scale scores, indicating greater negative affect than individuals not at risk ($P<0.05$). In a logistic regression predicting at risk, fruit and vegetable self-efficacy, Satisfaction with Life Scale score, and fruit and vegetable intake were independent predictors of risk ($P<0.05$).

Conclusions Older adults classified as at risk indicated a greater degree of negative affect and reduced self-efficacy to consume fruits and vegetables. This study supports the use of the DST in assessment of older adults and suggests a clustering of health concerns among those classified as at risk.

J Acad Nutr Diet. 2018;118:110-117.

THE AGING OF THE BABY BOOM COHORT[1] PRESENTS public health challenges, including efforts to postpone the onset of chronic diseases and effectively manage existing diseases and disabilities.[2] Healthful eating is important for maintaining and improving health in older adults.[3]

Although several screening tools have been developed to determine nutritional risk, many have not been validated with older adults[4,5] or are not related to health outcomes.[6] The Dietary Screening Tool (DST) was designed to identify dietary patterns[7] and classify older adults' degree of nutritional risk for a less healthful dietary pattern in clinical

settings.[8] The DST was found to have 83% sensitivity, 75% specificity, 79% accuracy level, and a 75% positive predictive value compared to dietary and biochemical indices of nutritional status.[8] Not only does the DST classify participants by degree on nutritional risk, which can indicate the need for more in-depth assessment, it also can be used for dietary guidance because it consists of seven components that can guide a clinician in identifying specific areas for tailoring dietary counseling.[8] The DST is a practical screening tool for assessing degree of nutritional risk that can be completed by older adults in approximately 10 minutes and scored in less than 5 minutes.[8]

Ford and colleagues[9] examined the relationship between risk classification of the DST and mortality in a large sample of older adults (mean age=81.4 years); nearly half of the sample was classified at risk. Controlling for age, sex, smoking status, and recent weight change, odds of all-cause mortality were 53% higher in the at-risk group compared with the not-at-risk and possible-risk groups (hazard ratio=1.53; 95% CI 1.06 to 2.22; P=0.02). This finding suggests that at-risk older adults might benefit from nutrition-related interventions.[10] Cottell and colleagues[11] found a 64% decrease in the number of participants classified at risk at the completion of a community-based diet and exercise intervention for older adults (n=96; mean age=69.2±6.2 years), demonstrating that the DST is sensitive to dietary change.

The DST is easy to use, has high sensitivity and specificity compared to dietary and biochemical variables as well as health outcomes, and is sensitive to change. However, the relationship between DST risk classification and functional, cognitive, and behavioral variables has not been explored. Evaluation of these relationships will contribute to a better understanding of the clustering of multiple concerns in older populations and address this research gap. This study was conducted to determine whether there were differences between DST risk categories for demographic, anthropometric, cognitive, functional, psychosocial, and behavioral variables in older adults.

METHODS

This cross-sectional study sample is composed of older adults enrolled in the SENIOR (Study of Exercise and Nutrition in Older Rhode Islanders II) Project from September 15, 2006 through July 31, 2012,[3,12] and data were collected for this study from September 15, 2009 to July 31, 2012. The SENIOR Project was approved by the Institutional Review Board of the University of Rhode Island. All participants provided written informed consent and cognitive status was assessed using the Folstein Mini-Mental State Examination (MMSE)[13] before enrollment and annually during the study (see Instruments for details).

Participants

The SENIOR I Project recruited 1,277 participants 60+ years of age who were randomized to one of four intervention groups.[14] Of the 968 participants who completed the 24-month assessment, 791 were eligible for Senior II (Action/Maintenance Stage of Change for fruits and vegetables or regular exercise at 24 months, willingness to participate in future research and baseline MMSE score ≥23 or 15 to 22.9 with physician approval); 470 enrolled in the SENIOR II follow-up study that began 3.5 years after the 24-month SENIOR I assessment. The theoretical framework, intervention components, assessments, and baseline data for the follow-up study have been reported previously.[3]

Individuals participating in the follow-up study were randomized to an intervention that encouraged maintenance of positive health behaviors (fruit and vegetable intake and exercise) or a comparison group that encouraged general health promotion. All participants completed annual assessments and were followed for 4 years.[3] A total of 313 of the 470 (66.6%) participants completed the 4-year follow-up study; 157 participants did not complete the study, due primarily to morbidity and mortality. The intervention had no effect on behavioral or psychosocial outcomes (Phillip G. Clark, ScD, personal communication, May 16, 2016); thus, the intervention and control groups were combined for the current cross-sectional study. The current study sample consisted of the 268 participants with complete DST data at the 48-month assessment point (45 participants excluded due to incomplete data). In addition, following the methodology of Bailey and colleagues,[7,8] 13 individuals were excluded because of potential depressive symptomology or cognitive impairment (Geriatric Depression Scale score >6.0[15] or MMSE score <23[13]) resulting in an analytical sample of 255.

Measures

Participants completed most assessments at baseline and every 12 months during the 4-year study, but the DST was only included at the 48-month assessment. Assessments were conducted by trained interviewers in the participants' homes or at the project office.[3] All instruments have been validated for use with older adults.[8,15-40]

DST

The DST is designed as a screening tool that characterizes dietary patterns[7] and categorizes participants into three levels of nutritional risk.[8] It includes 25 items: 17 items assess frequency of intake of foods (eg, how often do you usually eat whole-grain breads?), 2 assess nutrition behaviors (eg, How many different vegetable servings do you usually have at your main meal of the day?), 5 are yes/no behavioral questions (eg, Do you usually add sugar or honey to sweeten your coffee or tea?), and 1 item assesses multivitamin/mineral use. DST scores are used to classify respondents (<60, at risk; 60 to 75, possible risk, and >75, not at risk).[8]

Demographic Variables

Assessed demographics included self-reported age, sex, race/ethnicity, educational level, marital status, and living arrangement.

Anthropometric Variables

Trained study staff completed anthropometric assessments (body weight and height) a single time with participants wearing light clothing without shoes (unless contraindicated; if shoes were worn, height was adjusted to estimate shoe removal). Weight was measured in pounds to the nearest ounce using a digital floor scale (Model UC-321; A & D Engineering). Height was measured in inches to the nearest 0.25-inch using a portable stadiometer (Seca Road Rod; Seca