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Feature Article

The association between depression and widowhood and nutritional status in older adults

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ABSTRACT

This study aimed to investigate the association of depression and widowhood on the nutritional status of older adults. A cross-sectional study of community-dwelling older adults in the rural United States was conducted. Dietary intake was measured via questionnaires. Depression status was classified by asking participants if they have ever been diagnosed with the condition, or by review of medical records. The final sample consisted of 1065 participants with 141 (13.2%) depressed, 384 (36.1%) widowed, and 67 (6.3%) both depressed and widowed. Mean caloric intake for total study population was low; widows and widowers had the lowest energy consumption among all groups. Greater intake of several nutrients was observed in depressed and/or widowed subjects. Nutritional services, such as congregate and home delivered meal programs, were not identified as significant contributors to the nutritional intake in older adults who were depressed, widowed, or both. Health care professionals may contribute to meal-based nutrition programs by offering their assistance in aspects of nutritional education and counseling for the promotion of healthy aging.

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Introduction

Depression among older adults is a public health concern. In the United States, it is a condition that affects nearly 7 million older individuals over the age of 65.[1] A landmark report on mental health by the U.S. Surgeon General estimated that 8–20% of community-dwelling older persons suffer from depressive symptoms.[2] If left untreated, depression in later life poses a serious threat to the overall health of the aging population. Depression has been associated with several chronic diseases such as diabetes,[3] cancer,[4] and coronary heart disease.[5] It has also been associated with increased functional impairment,[6] morbidity,[7,8] mortality,[7,8] and usage of health services.[8]

Geriatric depression may also negatively impact nutritional status amongst aged persons. Depression is a leading cause of loss of appetite, refusal to eat, and weight loss in older adults.[9,10] Additionally, depression may influence unhealthy food choices. Individuals with depressive symptoms have been reported to have a greater preference for sweet foods[11] and lower intake of fruits or vegetables[12] than those without the condition. In turn, poor dietary habits may also position older adults at greater vulnerability for developing depression.[13] Several nutrient deficiencies have been associated with depression. Low levels of folate, zinc, omega-3 fatty acids, selenium, vitamin B_{12}, vitamin D, and iron may increase the risk of depression.[14–19] However, interventional studies that investigate the supplementation of certain micronutrients for the treatment of depression have demonstrated inconsistent results. For instance, some trials have shown the improvement of depressive symptoms through supplementation of omega-3 fatty acids[20,21] and selenium,[22,23] while others have found no difference.[24,25] Nonetheless, the deficiency of certain nutrients, such as folate, may reduce the effectiveness of antidepressants.[15] Thus, supplementing the intake of deficient nutrients has been employed as an adjuvant therapy to anti-depression medication to alleviate symptoms.[26]

Late-life conjugal loss and spousal bereavement places older adults at risk for depression.[27] Widowhood drastically alters the social environment of the surviving spouse, which prompts modifications to daily routines surrounding food practices that may adversely affect nutritional status. Widowed persons have reported loneliness, diminished enjoyment, and loss of appetite at mealtimes.[28] In comparison to peers who were married, widowed individuals are also more likely to consume fewer vegetables, ingest foods that are non-nutritious, and less likely to prepare homemade meals.[28–30] The consequences of widowhood on one's motivation to acquire, cook, and eat food may lead to a negative impact on weight status within the aged population. Widowed people are more likely to have lower body mass indices (BMI) and to have

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greater weight loss.[28–30] Unintentional weight loss in older adults is associated with heightened morbidity and mortality.[31] In particular, men may be more likely to suffer the adverse effects of widowhood in regards to food intake and preparation. A historic study reported that dietary patterns are more strongly associated with type of living arrangement in older men in comparison to women, whereby men with low income and not living with a spouse were at highest risk of consuming inadequate diets.[13] More specifically, widowhood in men has been associated with greater alcohol intake and lower vegetable consumption.[32]

Food and nutrition programs, such as congregate or home delivery meal services, offer older people an alternative channel of achieving their energy and nutrient requirements. For instance, the Elderly Nutrition Program (ENP) is a program that focuses on preventive nutrition targeted at older Americans via providing congregate and home delivered meals along with other related services.[33] Evaluation of the ENP has demonstrated its effectiveness. ENP recipients were found to be better nourished with mean daily intakes of essential nutrients approximately 4–31% higher than individuals not receiving assistance from ENP.[33] Specifically, meals provided by ENP supplied participants with 30–50% of their total nutrient intake per day.[33] However, it has been estimated that ENP services only reaches 7% of the nation's aging population in the United States.

As the number of older adults in the United States increases, the promotion of health in older adults will become increasingly important. Nutrition plays an essential role in the process of healthy aging. Malnutrition has been associated with impaired wound healing, poor immune function, anemia, decreased cognitive function, reduced bone mass, decreased muscle function and mortality in aged persons.[34] Awareness of the risk factors that may position older adults at greater chances of become malnourished will support healthy aging within this population by identifying those in need of assistance.

Since depression and widowhood are two factors that may negatively influence the dietary intake of older adults, we hypothesized that the presence of both variables will place older individuals at heighten nutritional risk as compared to those who are not depressed and/or not widowed. More specifically, the study analysis was designed to test the following hypotheses: (1) older adults who were depressed or widowed would have lower caloric intake than their non-affected counterparts, but older individuals who were both depressed and widowed would have the lowest caloric consumption of them all; (2) older persons who were depressed or widowed would have lower intakes of folate, zinc, omega-3 fatty acids, selenium, vitamin B_{12}, vitamin D, and iron than their non-depressed or widowed peers, but older adults who were both depressed and widowed would have the lowest nutrient intake of all groups; and (3) congregate and/or home delivered meals would be a major contributor to the nutrient intake in the diets of members of the aged population who are depressed, widowed, or both.

Methods

A cross-sectional study of community-dwelling older adults was conducted in the rural United States. Since our study involved human subjects, approval from the Human Subjects Board was obtained in addition to that from the Institutional Review Board at the primary institution where the research took place.

Sample and setting

One thousand one hundred older adults participated in the study and were recruited via convenience sampling techniques. Recruitment of subjects occurred through word of mouth, advertisements, flyers, and through community organizations whose membership included older adults. Specific types of organizations approached included the Commission on Aging, senior centers, Kiwanis, Red Hat Society, VWR (veteran foundation), Guilds, and outpatient clinics. Informed consent was obtained from each individual. Inclusion criteria was comprised of (1) ability to provide informed consent, (2) ability to reliably answer questions regarding demographics, lifestyle, diet, and health, and (3) age 60 years or older. Individuals were excluded if they were not willing to complete at least 25% of all the questions administered. Participation in the study was voluntary and no compensation was provided. Non-respondents included (1) participants who dropped out after completing one or more of the surveys, (2) people who refused participation but who consented to providing demographic information, and (3) individuals who consented and participated in the interviews, but did not wish to have their data incorporated into the analysis.

Measurements

All questionnaires were administered by trained interviewers in person at community organizations. At the beginning of the study, inter-rater reliability was determined by asking the same subjects ($n = 21$) identical questions by different interviewers on varying days. Respondents' reliability was also rated by interviewers on a scale of 1–5. In addition, third party verification of the information was acquired from the community organization where data were collected from family members, caregivers, or staff when available. Due to financial and time constraints, third party verification was not mandatory.

Participants were asked regarding marital status and chose from the following options: married, divorced, widowed, single, or other. Dietary information was collected via three sources. First, the Block Full Length Food Frequency (FFQ), a 160 item questionnaire with multiple responses with a reliability coefficient of 0.77 was administered to subjects.[35] Second, a 24 h Food Intake Recall (24 HR), an open ended intake method whose average reliability of 0.80 with trained interviewers was performed.[35] Lastly, the Mini Nutritional Assessment (MNA) was obtained. In additional to dietary assessment, subjects were asked whether or not they participated in a congregate or home delivered meal programs. Classification of depression was determined by asking if the respondent had a diagnosis of depression, review of the medical record, and/or verification by a third party.

Statistical analysis

Data were coded and cleaned within Microsoft Excel (Microsoft XP®); dichotomous variables were coded as 1, 0 or 1, 2. Subsequently, data were transferred and analyzed using SPSS for Windows (version 19.0; SPSS Inc, Chicago). Descriptive statistics were computed to summarize characteristics of the study sample. For binary data, logistic regressions were performed to determine the contributions of several factors to outcome. Additional statistical analysis consisted of the assessment of normally distributed data with *t*-tests and the association between variables by Spearman correlation coefficients. Statistical significance was defined as $p < 0.05$, unless otherwise specified.

Results

Of the initial 1100 participants recruited, 35 individuals failed to provide at least 25% of the information requested on demographics and health and were excluded from analysis. Missing data were

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