

45th Biennial Convention (16-20 November 2019)

Physical Activity Predicts Depression in Older Adults: The Impact of Race/Ethnicity and Level of Activity

Mercy Mumba, PhD, RN, CMSRN

*Capstone College of Nursing, University of Alabama Capstone College of Nursing,
Tuscaloosa, AL, USA*

Hui Wang, PhD

Institute for Rural Health Research, University of Alabama, Tuscaloosa, AL, USA

Alexandra F. Nancarrow

University of Alabama Capstone College of Nursing, Tuscaloosa, AL, USA

Introduction

There are almost 50 million people in the United States aged 65 and older (United States Census Bureau, 2017). According to the National Institute on Aging (NIA, 2017), America is experiencing population aging, and the number of people over the age of 65 is expected to continue rising and should reach close to 100 million by 2060 (United States Census Bureau, 2017). As individuals age, many develop a limited capacity for selfcare that may affect their physical and psychosocial wellbeing. About 8% to 30% of community dwelling older adults have clinically significant depressive symptoms (Forlani et al., 2013; NIA, 2017). Depression is not only associated with increased mortality and functional limitations, it can also lead to anxiety and poor self-image (CDC, 2017; Barry et al., 2014). Depression is also the most undertreated mental health disorder in older adults (CDC, 2017). The purpose of this study was to examine the associations between depression and physical activity among older adults in the United States.

Methods

This was a secondary data analysis of the 2015-2016 CDCs National Health and Nutrition Examination Survey (NHANES). Trained interviewers used the Computer-Assisted Personal Interview (CAPI) system to administer questionnaire items. Items of interest to the present study included demographic items, the Physical Activity Questionnaire (PAQ), and the Mental Health – Depression Screener (DPQ). Demographic items addressed participant age, income, and ethnicity. The PAQ contained 13 items divided into two subscales: work and recreational activities. The DPQ assessed participants' frequency of depression symptoms over the past two weeks and contained 9 items on a 4-point Likert scale, with 0 indicating "Not at all" and 3 indicating "Nearly every day." DPQ items take into account depression criteria from the DSM-IV.

Prior to analyzing the primary aims of the proposed study, a preliminary K-means clustering analysis revealed three levels of depression symptoms in participants. One cluster contained 167 participants who responded "Nearly every day" to more than three questions, indicating high levels of depression. A second cluster contained 1852 participants who had zero "Nearly every day" responses and responded "None" to more than six questions, indicating low levels of depression. A third cluster contained the remaining 455 participants with moderate levels of depression. Thus, the scoring system for depression level consisted of three levels: low (score of 0), moderate (score

of 1), and high (score of 2). Physical activity scores were distributed into four categories: total hours of vigorous work, intense work, vigorous recreation, and intense recreation.

Results

The sample included 2474 older adults. Age ranged between 50 and 80, with average age of 65 ($M_{age} = 64.97$, $SD = 9.38$). Of these, 35% were Caucasian, 31% were Hispanic, and 20% were African American. The scoring system for depression level consisted of three levels: low (score of 0), moderate (score of 1), and high (score of 2). Asians had the lowest depression scores whereas Hispanics had the highest depression scores.

Fisher's exact test indicated statistically significant differences in depression level according to race, $p < .01$. In comparison to Mexican Americans, other Hispanics, Caucasians, African Americans, and other, Asian participants demonstrated the highest percentage of participants with the lowest level of depression (68.88%), indicated by a score of 0 on the DPQ. On the other hand, the other Hispanics demonstrated the highest percentage of participants in the highest level of depression (10.34%), indicated by a score of 3 on the DPQ.

Lastly, we examined whether physical activity levels related to depression scores. Race was also initially included in the model, but we did not find any significant race effects. Thus, the data reported here do not include race in the model. The distribution of physical activity scores was positively skewed. Thus, a Wilcoxon rank sum test indicated statistically significant differences in vigorous work, $Z = 27.13$, $p < .01$, moderate work, $Z = 90.28$, $p < .01$, and moderate recreation, $Z = 13.17$, $p = .03$, according to race.

A nominal logistic regression revealed that the addition of physical activity variables to the model significantly improved the fit between the model and the data beyond the intercept, including vigorous recreation, $X^2 = 20.31$, $p < .0001$, and moderate recreation, $X^2 = 16.06$, $p < .001$. The odds ratio of low depression over moderate depression increased by .45 units for every additional hour of vigorous recreation. The odds ratio of low depression over moderate depression increased by .11 units for every additional hour of moderate recreation. The odds ratio of moderate depression over high depression increased by .38 units for every additional hour of vigorous recreation.

Conclusion and Implications for Practice

Depression should never be considered as a normal part of aging. Encouraging physical activity in older adults may be a nonpharmacologic way improve depression outcomes among older adults, while at the same time improving physical function in this population. Although any level of physical activity is recommended over a sedentary lifestyle, the results of this study indicate that the more vigorous the level of activity, the lower the odds of having depression. The results of this study also indicate that depression levels vary by race, with Asians exhibiting the lowest levels of depression, and Hispanics exhibiting the highest depression levels. Further studies are needed to explore these differences to determine factors associated with low depression levels in Asians and those associated with high depression levels in Hispanics.

Title:

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Keywords:

depression, older adults and physical activity

References:

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Abstract Summary:

The purpose of this presentation is to discuss the associations level of physical activity and level of depression among older adults and these relationships are influenced by race, gender, and level of physical activity. The presentation will also include a discussion on implications for nursing practice.

Content Outline:

Description of Education Activity

The purpose of this presentation is to discuss the associations level of physical activity and level of depression among older adults and these relationships are influenced by race, gender, and level of physical activity. The presentation will also include a discussion on implications for nursing practice. Finally, the presentation will include a discussion on recommendations for future research and appropriate evidence-based nursing interventions that promote physical activity in older adults.

Content Outline

Introduction and Background

- Discuss population of people aged 50 and above.

- Discuss factors associated with physical activity and depression in older adults.
- Discuss treatment options for depression in older adults.

Aims of the Study

- Discuss the aims of the study and any hypotheses, which are to examine the relationships between physical activity and depression symptoms in older adults and how these associations are influenced by race, gender, and level of physical activity.

Methods and Procedures

- Discuss sampling and sample size estimation.
- Discuss data collection procedures.
- Discuss data cleaning and management procedures.
- Discuss creation of variables for statistical analyses and rationales.

Results

- Description of sample and demographic characteristics.
- Discuss associations among level of physical activity and depression.
- Discuss the results of the nominal regression analysis.

Discussion and Implications for Nursing

- Discuss non-pharmacologic interventions for depressive symptoms in older adults.
- Discuss emerging trends in racial differences in prevalence of depression.
- Discuss evidence-based interventions to promote physical activity and aging in place for older adults in the United States.
- Discuss recommendations for future research in this population.

First Primary Presenting Author

Primary Presenting Author

Mercy Mumba, PhD, RN, CMSRN
 University of Alabama Capstone College of Nursing
 Capstone College of Nursing
 Assistant Professor- Tenure Track
 Tuscaloosa AL
 USA

Author Summary: Dr. Mumba is an innovative researcher who is well versed in both qualitative and quantitative research methodologies. Her primary research area of focus is substance abuse among nurses and their psychosocial wellbeing. Dr. Mumba has further conducted several studies involving improving patient satisfaction in acute care setting. She is a published author and has presented her research at many local, regional, and international research conferences.

Second Secondary Presenting Author

Corresponding Secondary Presenting Author

Hui Wang, PhD
 University of Alabama
 Institute for Rural Health Research
 Research Data Analyst
 Tuscaloosa AL
 USA

Author Summary: Dr. Wang is a research data analyst with the Institute for Rural Health Research at the University of Alabama. He has a PhD in bio-statistics and has expertise with various types of statistical analysis, including secondary data analyses and big data.

Third Secondary Presenting Author

Corresponding Secondary Presenting Author

Alexandra F. Nancarrow

University of Alabama Capstone College of Nursing

Graduate Research Assistant; PhD Candidate

Tuscaloosa AL

USA

Author Summary: Alexandra Nancarrow is a PhD candidate in the Department of Psychology at the University of Alabama. She is also a graduate research assistant in the Capstone College of Nursing. Her expertise is statistical analysis and modeling and she has a wealth of knowledge related to secondary data analyses.