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## Characterizing Mobility Limitations among Older African American Men

Jamie A. Mitchell, PhD<sup>a</sup>, Roland Thorpe Jr., PhD<sup>b</sup>, Vicki Johnson-Lawrence, MS, PhD<sup>c</sup>, and Ed-Dee G. Williams, MSW<sup>d</sup>

Jamie A. Mitchell: Mitchj@umich.edu; Roland Thorpe: rthorpe@jhu.edu; Vicki Johnson-Lawrence: vickij@umich.edu; Ed-Dee G. Williams: eddeew@umich.edu

<sup>a</sup>Assistant Professor, School of Social Work, The University of Michigan, 3847 SSWB, 1080 S. University Avenue, Ann Arbor, MI 48109-1106, Phone: 734-763-4955, Fax: 734-763-3372

<sup>b</sup>Assistant Professor, Johns Hopkins Bloomberg School of Public Health, 624 N., Broadway, Ste 708, Baltimore, MD 21205-1999, Phone: 410-502-8977, Fax: 410-614-8964

<sup>c</sup>Assistant Professor, Public Health and Health Sciences, University of Michigan- Flint, 3124 William S White Bldg, 303 E Kearsley St, Flint, MI 48502, Phone: (810) 424-5628

<sup>d</sup>PhD Student, Social Work and Sociology, University of Michigan, 3253 LSA Building, 500 S. State Street, Ann Arbor, MI 48109-1106, Phone: (734) 645-0880

### Introduction and Background

A certain degree of functional decline is expected during older adulthood, and preserving mobility is recognized as essential to active healthy aging and maintaining a high quality of life.<sup>1,2</sup> Broadly, functional decline in the context of aging has been defined as any health problem that prevents a person from completing a range of tasks; including activities of daily living (ADL) (i.e. feeding, bathing, walking across a room) and instrumental activities of daily living (IADL) (i.e. shopping, housework, and preparing meals).<sup>3,4</sup> Extant literature broadly defines mobility as one's ability to move independently around their environment<sup>3,5,6</sup>, which is essential to both ADLs and IADLs.<sup>3</sup> Other literature have found that a decline in mobility often precedes the onset of a disability, social isolation, a loss of independence, and poorer health status<sup>1</sup>, quality of life<sup>5</sup>, and death<sup>2,3</sup> for many older adults. Seminal authors have generally pointed towards the onset and severity of mobility decline as patterned along socioeconomic and racial gradients in the United States.<sup>1,2</sup> For example, African American older adults experience functional limitations as particularly debilitating; they have higher rates of inactivity<sup>7,8</sup> and similar literature document that a higher prevalence of diabetes and obesity for this populations contributes to disparities in functional decline.<sup>2,9</sup>

Correspondence to: Ed-Dee G. Williams, eddeew@umich.edu.

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Older African American men often face added challenges to maintaining mobility. Studies have identified a limited number of factors associated with a loss of mobility and or increased functional limitations over time among older African American men including: lower levels of education,<sup>2</sup> frailty,<sup>10</sup> residing in poor-quality neighborhoods,<sup>11</sup> anxiety and depression and sarcopenia-related disability.<sup>12</sup> The knowledge base specifically focused on older African American men and functional decline remains relatively limited, but more broadly, extant scholarship points to mental health as a potentially understudied influence on functional health among older adults. For example, Bishop and colleagues<sup>13</sup> highlight how depression and anxiety affect an individual's perception of musculoskeletal pain, which may lead to functional limitations. Other studies report that depressive symptoms alone predict the onset of functional limitations related to ADLs and mobility as people advance from middle age to later life, and the relationship between depression and disability is often greatest amongst men.<sup>14</sup> Despite an established link between depressive symptoms to functional decline,<sup>15</sup> and older African American men being most likely to be classified as frail compared to men of other racial/ethnic groups,<sup>10</sup> older African Americans do not report experiencing significantly higher overall incidence of depressive symptomatology.<sup>16</sup>

This study represents an effort to contribute to the limited body of research on biopsychosocial contextual factors that influence or contribute to mobility limitations for older African American men. Specifically, we were interested in examining associations between socio-demographic, physical and emotional health experiences with mobility limitations.

## Methods

Between 2006 and 2010, the Centers for Medicare and Medicaid Services (CMS) funded an intervention study to promote cancer screening among minority elders recruited by a large hospital system in Detroit, Michigan. Specifically, this longitudinal study recruited 5,783 African American adults aged 60 and older from more than 25 senior living facilities, 100 older adult day centers, approximately 50 church or religious organizations for African American elders, and health clinics affiliated with the larger health system in order to test a randomized patient navigation intervention targeting Medicare enrollees. Each participant in this study was randomized into one of two study arms: either receiving patient navigation services or standard cancer screening recommendations without additional services. Nurses served as research coordinators, collecting a baseline and exit assessment by phone for each participant that documented cancer screening behaviors, health and cancer-specific knowledge and beliefs, and socio-demographic characteristics. The current study represents a secondary analysis of de-identified baseline assessments for all African American male participants in this parent study prior to the intervention (N=1666). The authors of this secondary study were not involved in the design or administration of the parent study.

## Measures

### Mobility limitation

Mobility limitation was assessed by asking respondents to indicate which statement best describes their health state today. The options were: "I have no difficulty walking about one

fourth mile or climbing 10 steps”, “I have some difficulty walking about one fourth mile or climbing 10 steps” or, “I am unable to walk about one fourth mile or climb 10 steps.” This measure was further dichotomized so that responses of “some difficulty or unable” were coded as (1) and no difficulty was coded as (0). This measure was modified from the well-validated Medical Outcome Study (MOS) 36-Item Short Form Health Survey (SF-36) versions 1.0 and 2.0.<sup>17</sup> This item has also been assessed for relevance, reliability, and validity specifically with African American older adults. With regard to reliability, studies report a Cronbach’s alpha of 0.77 and good convergent and discriminant validity when tested with community-dwelling African American adults<sup>18,19</sup>.

### **Socio-demographic variables**

Socio-demographic variables were assessed by self-report. Income was measured by respondents’ reported household income in U.S. dollars in the 12 months prior to the interview and was divided into nine ascending categories: Less than \$5,000; \$5,000–\$9,999; \$10,000–\$19,999; \$20,000–\$29,999; \$30,000–\$39,999; \$40,000–\$49,999; \$50,000–\$79,999; \$80,000–\$99,999; and \$100,000 or more; before being dichotomized into less (1) and more (0) than \$20,000. Education was dichotomized such that participants having a high school diploma or less were in one category, and those having some college or higher education were in the second category. Respondents’ partner status was dichotomized such that those “married” or “living with partner” were in the partnered category, and those “widowed”, “divorced”, “separated” and “never married” were in the un-partnered category. Age was measured using a single continuous item and later dichotomized during the analysis into participants over and under age 75.

### **Emotional or mental health variables**

Emotional or mental health variables were collected in order to determine the psychological and social context of mobility limitations among these participants. These variables included anxiety or depression, downheartedness, and accomplishing less than one would like due to emotional problems. Anxiety or depression was measured using a single item asking participants to indicate the statement that was most true for them. Responses included items that stated, “I am not anxious or depressed”, “I am moderately anxious or depressed”, and “I am extremely anxious or depressed”. Response categories for most and all of the time were combined into a single category (coded as 1) and all other responses were combined (coded as 0). In an effort to identify emotional health alternatives to depression, we utilized an item that asked, “During the past four weeks, how much of the time have you felt downhearted and blue?” Responses included “all of the time,” “most of the time,” “some of the time,” “a little of the time,” and “none of the time”. This item was further dichotomized for the analysis so that “all of the time” and “most of the time” were combined (coded as 1) and all other responses were combined (coded as 0). Finally, to better understand how emotional health problems might interfere with physical functioning, participants were asked, “ During the past 4 weeks, how much of the time have you accomplished less than you would like with your work or other regular daily activities as a result of any emotional problems? Responses were indexed on a five-point scale from “none of the time” to “all of the time”. The responses for “most of the time” and “all of the time” were combined to form a binary variable (coded as 1) in contrast to all other responses (coded as 0).

## Physical health

Physical health was assessed by asking respondents to indicate their level of agreement with statements about difficulty with pain, usual activities, and generally in the types of activities they can perform due to physical health. Measures to characterize physical health were modified from the pain, general health, and role limitations due to physical health subscales of the SF-36. Limitations to usual activities was characterized by asking participants to choose one option from statements indicating, “I have no problems with performing my usual activities”, “I have some problems with performing my usual activities”, and “I am unable to perform my usual activities”. Any problems with usual activities were combined into a single binary variable. Self-rated health was assessed with a single global item whereby participants rated their health status on a five-point scale from poor to excellent; poor self-rated health was coded as (1) and used as the reference group.

With respect to experiencing pain, participants were asked, “during the past few weeks, how much did pain interfere with your normal work (including both work outside the home and normal housework)” with five responses ranging from “not at all” to “extremely.” The most severe pain interference was categorized as the reference group. A single item to assess self-rated health asked participants to rate their health on five-point scale from excellent to poor and responses of “fair” and “poor” were combined to create a single category (coded as 1) to compare to all other responses (coded as 0). Participants were asked to indicate whether a doctor had ever diagnosed them with one of nine common health conditions: high blood pressure or hypertension, diabetes, chronic lung diseases, any heart diseases, stroke, gastrointestinal problems, emotional or psychiatric problems, arthritis, or memory related diseases. The presence of any one or more conditions was coded as (1) while the absence of any aforementioned health condition was coded as (0).

## Statistical Analyses

A missing value analysis determined that missing values were randomly distributed across all observations and item non-response was addressed with list-wise deletion of cases. Descriptive analyses were performed with frequency distributions on each relevant variable to develop a demographic profile for this sample of African American men. Bivariate analysis with cross-tabulations and chi-square tests of significance were performed to identify associations between mobility limitations and socio-demographic, physical and emotional health factors. We fit a multiple logistic regression model using variables associated with the outcome in aforementioned analyses to identify factors that significantly influence the odds of mobility limitation for older African American men. Significantly associated covariates were entered into a single model and then removed sequentially until a further deletion resulted in a significantly poorer fit. The final model included five variables: difficulty with self-care, severe pain interference, problems with usual activities, being married, and being over age 75 years. Data were analyzed using SPSS version 22 (SPSS Inc., IBM). It is necessary here to point out that we did not combine self-care with usual activities as their interpretations differ. Self-care speaks to activities that may not be as common as usual or daily activities. For example, participating in a weekly or monthly yoga class as compared to brushing one’s teeth or walking to the bathroom. Multiple studies using

similar tools and measures draw distinctions between usual activities and self-care as well.  
20–22

## Results

This sample included 1,666 African American men. The mean age of this sample was 73.6 years (SD = 10.9). Forty-five percent of participants were partnered, and more than 38% had attained at least some college or higher education. With respect to indicators of health and mobility, 52.9% of participants were limited a lot by their health in performing moderate activities, while a 33.2% had at least some problems walking ¼ mile or climbing ten steps. Additional demographic characteristics of this sample can be found in Table 1. A bivariate analysis using chi square tests of association for categorical predictors was utilized to determine the strength and direction of relationship between the outcome variable (some problems walking ¼ mile) and each independent variable. Bivariate findings can be found in Table 2. Although a number of factors were statistically significant, problems performing usual activities ( $\chi^2=409.89$ ,  $p=0.0$ ), difficulty with self-care ( $\chi^2=240.85$ ,  $p=0.0$ ), poor self-rated health ( $\chi^2=62.25$ ,  $p=0.0$ ) and severe pain interference ( $\chi^2= 54.31$ ,  $p=0.0$ ) were most strongly associated with mobility limitations.

A test of the full model using the five variables (difficulty with self-care, severe pain interference, problems with usual activities, being married, and being over age 75 years) most associated with the outcome compared to the null model was statistically significant,  $\chi^2= 505.09$ ,  $df=5$ ,  $p<.001$ . We would characterize the final model as moderately strong, with a Nagelkerke's  $R^2= 0.38$ . Experiencing problems with performing usual activities (OR=7.336) was the strongest predictor of any difficulty or inability to walk about one fourth mile or climb 10 steps, while being married was negatively associated with limited mobility (OR=0.591). Overall, experiencing difficulty in performing usual activities and self-care (OR=5.097), and to a lesser degree, severe pain interference (OR=2.81) and being over age 75 (OR=1.596) significantly increased the odds of mobility limitations for this sample of older African American men. Table 3 summarizes the binary logistic regression coefficients and the estimated change in odds for difficulty or inability walking about ¼ mile or climbing ten steps on the basis of the five significant predictors at the final step in the model building process.

## Discussion

This research centered on identifying and contextualizing psychosocial and health related factors that contribute to the self-reported mobility limitations for older African American men, a population that generally experiences disparities for multiple indicators of health. Findings highlighted the significant link between mobility, specifically walking a short distance and climbing stairs, and the ability to care for oneself independently and carry out basic activities of daily living, such as eating, bathing, or dressing. These results align with a large representative prior study which found that minority adults with mobility limitations were 43 times more likely to experience difficulty with activities of daily living than non-minority adults and adults without barriers to mobility.<sup>8</sup> This is particularly salient

considering the documented reduction in life expectancy among older adults who are unable or severely limited in performing activities of daily living.<sup>23</sup>

In this study, the experience of pain interfering with normal work (both inside and outside of the home) also emerged as a salient predictor of functional limitations for older African American men. A large scale study in the United Kingdom concurred that individuals reporting pain were significantly more likely to also report mobility limitations.<sup>24</sup> It is very interesting to note that African American adults report greater pain severity, pain interference, and pain-related physical and psychosocial disability than their white counterparts,<sup>25</sup> but that the use of particular culturally-informed coping strategies has been shown to reduce the impact of pain on functional disability and psychological distress.<sup>26</sup>

Of significant relevance to health in later life, are the link between mental health and the increased ability to live actively and independently. For example, recent work have found that older adults with a mental health condition experienced greater disability and more frequent emergency room visits and hospitalizations than older adults with physical illness alone.<sup>27</sup> In the current study, nearly a quarter of older African American men reported being downhearted, and 27% reported accomplishing less in their daily lives due to emotional problems. Men who reported being downhearted were nearly four times as likely to face difficulty walking ¼ mile or climbing ten steps as men who were not downhearted. Bartel & Naslund<sup>27</sup> reported that mental health care accounted for only one percent of Medicare expenditures in 2012, signaling a need to examine and address critical gaps in geriatric mental health services availability and utilization. This is particularly germane to the functional health of older African American men, who are less likely to be diagnosed with a mental health condition or receive mental health treatment.<sup>16</sup> Studies document differences grounded in the intersection of gender and culture that may result in older African American men describing their mental health symptomatology in a way that may cause clinicians to miss opportunities to accurately assess and treat mental and emotional health conditions.<sup>16</sup>

Of positive note, the presence of a marital partner decreased the likelihood that older African American men in this study would experience functional limitations by 63%. A strong body of research asserts that social, emotional, and physical or instrumental support specifically provided by a marital partner buffers the psychological impact of functional limitations on older men, and bolsters self-confidence and social engagement among older men with mobility disabilities.<sup>28</sup> Two unexpected findings were that men with poor self-rated health and any comorbidities were less likely to report difficulty walking ¼ mile or climbing ten steps. These variables by themselves do not provide either a necessary or sufficient explanation of their inverse association to limited mobility. However, future investigations should take into account whether and how limited mobility may be a secondary concern for older men seriously challenged in managing comorbidity, and who relatedly, may be more likely to report poorer self-rated health.

### **Limitations and Conclusions**

This study has some limitations. The data from this project are cross-sectional. As a result this limited the generalizability and the ability to draw causal inferences from these findings. In addition, because participants were recruited from a specific geographic region, findings



may not be generalizable to broader regions of the country. A single measure was available to secondarily assess limited mobility, and the full scope of mobility as a construct may not have been represented in that single item. Also there is the possibility of these associations being bidirectional, limited functional mobility often can be related to emotional, physical and social deficits. Despite these limitations, this study contributes to the literature on factors that may shape the trajectory of mobility limitation for older African American men by employing a large sample size and including factors shown to be salient influences such as emotional health issues, which has not been extensively explored as a contributing factor to functional decline among older African American men. In addition, this work provides the necessary information needed to consider potential points of intervention for a population that experiences significant mobility limitations in later life but has received little attention to the diverse set of individual and social contextual conditions that shape their mobility trajectory.

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**Table 1**

Demographic Characteristics of Older African American Men (N=1600 – 1666)

	Count	Percent	Mean (SD)
Age			73.6 (10.9)
Over age 75	770	46.2	
Income			
\$0-\$19,999	555	33.6	
\$20k-\$49,999	622	37.3	
\$50 or more	150	9	
Unreported	327	19.6	
Education			
No Diploma	650	39.3	
Diploma/GED	367	22	
Some college	420	25.2	
College degree	216	13	
Married	756	45.4	
Lives alone	626	37.6	
Measures of Functional Limitations			
Limited a lot by health in performing moderate activities	834	50.1	
At least some problems walking	553	33.3	
At least some problems performing usual activities	319	19.3	
Limited a lot by health in climbing several flights of stairs	834	50.1	
Limited most or all of the time in the types of activities due to physical health	1069	64.2	

**Table 2**

Bivariate analysis of factors associated with problems walking about ¼ mile or climbing ten steps

<b>Variable</b>	<b>N</b>	<b>X<sup>2</sup></b>	<b>(p)</b>
<b><u>Demographic</u></b>			
Age 75+	276	4.537	0.03
<20K	221	16.48	0
Married	201	27.23	0
<u>Some college of more</u>	169	0.03	0.85
<b><u>Health Status</u></b>			
Poor self-rated health	95	62.25	0
Problem with usual activities	259	409.89	0
Any of 9 morbidities	49	22.54	0
Severe pain interference	118	54.31	0
<u>Difficulty with self-care</u>	141	240.85	0
<b><u>Emotional or Mental Health</u></b>			
Accomplished less/emotional problems	439	30.9	0
Downhearted most or all of the time	395	5.15	0.023
Anxiety or Depression	148	36.98	0

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**Table 3**  
 Logistic Regression Predicting problems walking about ¼ mile or climbing ten steps

Predictor variable	B	S.E. (B)	Wald	OR	95% CI	
					Lower	Upper
Difficulty w/self-care	1.629***	0.287	32.241	5.097	2.905	8.942
Severe pain interference	1.032***	0.129	63.764	2.81	2.179	3.616
Problems w/usual activities	1.993***	0.175	129.61	7.336	5.205	10.338
Married	-.525***	0.129	16.648	0.591	0.46	0.761
Over age 75	.468***	0.128	13.318	1.596	1.24	2.05
Constant	-1.84***	0.130	195.52	0.163		
$\chi^2 = 525.56$ ***		$df=5$				

\* p<.05,

\*\* p<.01,

\*\*\* p<.001

Cox=.27; Nagelkerke=.38