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Gardening/Yard Work and Depressive Symptoms in African Americans

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Background

The purpose of this study was to examine the frequency of gardening/yard work in relation to depressive symptoms in African-Americans while controlling for biological and social factors.

Methods

A secondary analysis was performed on the National Survey of American Life (n = 2,903) using logistic regression for complex samples. Gardening/Yard work was measured by self-reported frequency. Depressive symptoms were measured with the Center for Epidemiologic Studies Depression scale.

Results

Biological and social factors, not gardening/yard work, were associated with depressive symptoms.

Conclusions

Biological and social factors may need to be addressed before the association between gardening/yard work and depressive symptoms can be determined.

Depression is the leading cause of disability worldwide and a major contributor to the global burden of disease (World Health Organization, 2012). The lifetime prevalence of major depressive disorder (MDD) in African-Americans is estimated to be 9–13% (Williams et al., 2007). Although this is lower than the prevalence in other groups, such as (17.9%), the chronicity of MDD is higher for African-Americans than Whites (56.5% vs. 38.6%), with African-Americans rating their MDD more severe and disabling than Whites (Williams et al., 2007). In addition, depressive symptoms that do not meet the diagnostic criteria for clinical depression are associated with increased disability, decreased quality of life (Rodríguez, Nuevo, Chatterji, & Ayuso-Mateos, 2012), and MDD recurrence of 8–10% per year (Meeks, Vahia, Lavretsky, Kulkarni, & Jeste, 2011). Reducing elevated depressive symptoms in African-Americans who do not meet the diagnostic criteria for depression is a significant public health goal.

In randomized control trials, physical activity was effective in reducing depressive symptoms in adults with depression (Cooney et al., 2013). Longitudinal prospective studies demonstrated that physical activity was effective in reducing the risk of depression in children and adults without depression at baseline (Mammen & Faulkner, 2013). Neither study analyzed race as a factor.

A report from the Surgeon General revealed that African-Americans are underrepresented in mental health research (U.S. Department of Health & Human Services, 2001). As evidence of this, few longitudinal studies have included African-Americans in sufficient numbers to support generalizing results to this population. A randomized control trial found that adherence to a 24-week walking intervention decreased depressive symptoms in midlife African-American women in one urban environment (Wilbur et al., 2009), although no mention was made of whether participants met the diagnostic criteria for depression. A national longitudinal study found vigorous physical activity, but not walking, was associated with less depressive symptoms in African-American adult women who did not meet the diagnostic criteria for depression at baseline (Wise, Adams-Campbell, Palmer, & Rosenberg, 2006). Both studies did not include men or representative samples of women, and only one indicated that theory was used to guide the investigation (Wilbur et al., 2009). There has, however, been an increase in cross-sectional studies of African-Americans, with more physical activity associated with decreased odds of depressive symptoms (Farmer et al., 1988, Torres et al., in press, Torres et al., 2013, Wise et al., 2006).

Physical activity is any bodily movement produced by contraction of skeletal muscle that increases energy expenditure above a basal level (Center for Disease Control & Prevention, 2015). Physical activity occurs across four life domains: leisure-time, transportation, occupation, and household (Sallis et al., 2006). Previous studies in African-Americans have mostly focused on leisure-time (Farmer et al., 1988, Torres et al., 2013, Wise et al., 2006) and transportation physical activity (Torres et al., in press, Wilbur et al., 2009, Wise et al., 2006). No studies were found that focused on occupation physical activity and depressive symptoms in African-Americans.

One intervention study found that household physical activity, specifically yard work, was not associated with depressive symptoms in African-Americans in a metropolitan area, although the attendance rate for the classes was only 27% (Izquierdo-Porrera, Powell, Reiner, & Fontaine, 2002). In a cross-sectional study of older Japanese adults, gardening, another type of household physical activity, was considered a moderately to very pleasant activity associated with happiness (Onishi et al., 2006). Neither study excluded participants who met the diagnostic criteria for depression. It is important to examine the association between household physical activity such as gardening or yard work and depressive symptoms in African-Americans who do not meet the diagnostic criteria for depression.

Since physical activity is hypothesized to relieve depressive symptoms through personal and environmental factors, theories that consider multiple levels of influence are appropriate (Torres, Sampsel, Gretebeck, Ronis, & Neighbors, 2010). Multi-level ecological theories offer an integrative and broad approach to understanding the mechanisms by which various factors, including personal and environmental, affect well-being (Stokols, 1992). The Social Ecology of Health Promotion framework (Stokols, 1992) was used to examine the association between depressive symptoms and leisure-time physical activity (Torres et al., 2013) and walking (Torres et al., in press) in African-Americans, and is the framework used in the current study. Within personal factors, Stokols discussed biogenetic, psychological, and behavioral categories. Within environmental factors, Stokols discussed sociocultural and geographic categories. Stokols operationalized each category. Fig. 1 depicts personal factors nested within environmental factors as predictors of depressive symptoms, while providing the categories under each factor. Within personal factors, examples of biogenetic variables that have been shown to predict depressive symptoms in African-Americans include age, family history of depression, body mass index, and disability. Advanced age is associated with decreased odds of depressive symptoms, while a family history of depression, a body mass index in the underweight range and more disability have all been associated with greater odds of depressive symptoms (Torres et al., 2013, Torres et al., in press). Also within personal factors, physical activity is an example of a behavioral variable that has been shown to predict depressive symptoms in African-Americans (Farmer et al., 1988, Torres et al., 2013, Torres et al., in press, Wilbur et al., 2009, Wise et al., 2006). Within environmental factors, an example of a sociocultural variable that has been shown to predict depressive symptoms in African-Americans is household income, with higher household income associated with decreased odds of depressive symptoms (Torres et al., in press). Although neighborhood safety (Torres et al., in press) and crime (Wilbur et al., 2009) have not been shown to be predictive of depressive symptoms in African-Americans, they are included in the current analysis as previous studies focused solely on walking. Also within environmental factors, an example of a geographic variable that has been shown to predict depressive symptoms in African-Americans is national region. Those living in the southeast and western United States have a lower prevalence of depression than those in the northeast and midwest (Williams et al., 2007). Thus, the purpose of this study was to examine the frequency of gardening/yard work in relation to depressive symptoms in a nationally representative sample of non-depressed African-Americans, while controlling for personal and environmental factors as outlined in a modified version of Stokols's (1992) Social Ecology of Health Promotion framework.

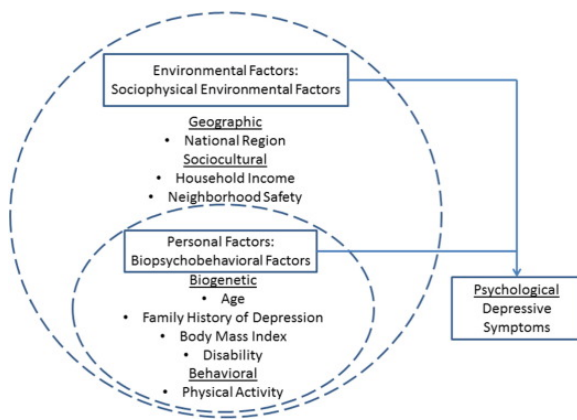


Fig. 1. Stokol's Social Ecology of Health Promotion Modified to Examine Physical Activity and Depressive Symptoms in African-Americans.

Methods

Design and Sample

A secondary analysis was performed on the National Survey of American Life (NSAL), for which cross-sectional interviews were conducted in 2001–2003 (Jackson et al., 2004). This is the only time frame when interviews were conducted in the NSAL. Data obtained from all interviews were used in the current study. A four-stage national area probability sampling was used (Heeringa et al., 2004): stage 1 — stratified probability sample of U.S. households where $\geq 10\%$ of household residents were reported to be African-American based on the 1990 census; stage 2 — linking geographically continuous census blocks; stage 3 — systematic random samples of housing units; and stage 4 — random selection of respondents for study interviews from a complete list of eligible adult members living at the sample housing unit address. Interviewers and respondents were racially matched for face-to-face interviews with a response rate of 70.7% (Jackson et al., 2004). As the focus of this study was on health promotion and prevention of depression, and because clinical depression may influence physical activity (Roshanaei-Moghaddam, Katon, & Russo, 2009), individuals with clinical depression were excluded. Specifically, of the African-Americans in the NSAL ($n = 3,570$), respondents were excluded who met the DSM-IV-TR criteria for MDD ($n = 43$), dysthymia ($n = 1$), and bipolar disorder ($n = 13$). Cases missing data on depressive symptoms, gardening/yard work, or covariates were excluded, resulting in a sample size of 2,903. In the original study, oral informed consent was obtained prior to initiating the interviews. The Institutional Review Board at the University of Michigan granted approval for the NSAL (Jackson et al., 2004) and for the current secondary analysis.

Measures

The NSAL measured depressive symptoms with 12 items from the original 20-item Center for Epidemiologic Studies Depression (CESD) Scale (Radloff, 1977). Although this author was not involved in the conceptualization and data-collection of the NSAL, the protocol indicates that the NSAL comprised a nationally representative sample with face-to-face interviews lasting on average 2 hours and 20 minutes (Jackson et al., 2004). The interview time necessitated a short and inexpensive measurement of depressive symptoms. Although there are several shortened versions of the CESD (Zauszniewski, 2009, Zauszniewski and Graham, 2009), only one study provided results that were generalizable to a nationally representative sample of Blacks living in the U.S. (Roberts & Sobhan, 1992). The 12-item CESD in the NSAL, which is identical to the 12-item CESD used by Roberts and Sobhan (1992) with Black adolescents, has been validated in African-American adults in the NSAL (Torres, 2012). Eleven items in African-American women ($\alpha = 0.80$) and 10 items in African-American men ($\alpha = 0.73$) demonstrated reliability and validity in a previous study using NSAL (Torres, 2012) and were used in the current

study. A cut-score of 16 was used on the 20-item version (Radloff, 1977). The 11 and 10-item CESD have the same response options for each item as the original 20-item version: 0-1-2-3, but with a maximum score of 33 and 30 respectively, instead of 60 with the 20-item version (Torres, 2012). Kohout's formula was used to determine a standardized cut-score using an arithmetic conversion based on the possible total score (Kohout, Berkman, Evans, & Cornoni Huntley, 1993). For the 11-item CESD, the total score was $33/60 = 0.55$, yielding a cut-score of $16 \times 0.55 = 8.8$, or approximately 9 (Torres, 2012). Similarly, for the 10-item CESD, the total score was $30/60 = 0.50$, yielding a cut-score of $16 \times 0.50 = 8.0$ (Torres, 2012). This method has been used to determine the cut score of various shorter forms of the original 20-item CESD (Zauszniewski, 2009). Higher scores indicate more symptoms (Torres, 2012).

Gardening/Yard work was measured with responses to one question from the Americans' Changing Lives questionnaire (Lantz et al., 1998): "How often do you work in the garden or the yard?" One of four responses were chosen: *never* (4), *rarely* (3), *sometimes* (2), or *often* (1). Scores were re-coded *never* (0), *rarely* (1), *sometimes* (2), or *often* (3) with higher scores indicating more gardening/yard work.

Biological factors included age, disability, family history of depression, and body mass index. Age was measured continuously in years. Level of disability was measured continuously with three items from the World Health Organization's Disability Assessment Schedule II mobility domain, with higher scores indicating a higher level of disability (Rehm et al., 2006). If respondents noted that health-related problems caused difficulties in mobility in the 30 days preceding the interview, they were subsequently asked about their level of difficulty in a) standing for long periods, such as 30 minutes; b) moving around inside their home; and c) walking a long distance, such as a kilometer (i.e., half a mile). Responses included *none* (1), *mild* (2), *moderate* (3), *severe* (4), and *can't do* (5) and were first scored as 0, 0.25, 0.50, 0.75, and 1.0, respectively (Rehm et al., 2006). They were subsequently transformed to a 0–100 scale (0 = no impairment; 100 = complete impairment) (Rehm et al., 2006). Respondents who were not asked these questions due to their excellent health status were given a score of 0 (Rehm et al., 2006). The Cronbach alphas were 0.68 for African-American women and 0.76 for African-American men in the current sample. Respondents were asked whether they had a family history of depression (yes/no). Self-reported weight and height information was obtained to calculate body mass index (BMI) (weight (kg)/height squared (m^2)), which was measured categorically (U.S. Department of Health & Human Services, 2000): < 18.5 (underweight), 18.5–24.9 (normal weight), 25–29.9 (overweight), and 30 + (obese).

Social factors included household income, neighborhood safety, and national region. Household income was measured continuously. Neighborhood safety was measured by two questions from the National Survey of Black Americans related to theft or assault and drug selling/use. Responses were scored on a rating scale ranging from neighborhood safety being a problem (1) very often or very serious to (4–5) never or not serious at all. Scores were recoded, and the average of the scores was measured continuously ranging from 1–4.5 so that higher scores indicate more neighborhood safety. Cronbach alpha for this study was 0.735 for women and 0.718 for men. National region (west, midwest, south and northeast) was ascertained by comparing the state the respondent lived in with the census bureau regions (U.S. Census Bureau, n.d.). Dummy coding was utilized, with west as the reference group.

Analytic Strategy

Since the NSAL used a multistage sample design involving clustering and stratification, specialized statistical techniques were used to account for the complexity of the design and its associated standard errors. Weights constructed specifically for the study design and methodology were used in the analysis (Heeringa & Berglund, n.d.). The NSAL weights take into account unequal probabilities of selection, characteristics of non-respondents, and post-stratification. Weighting for unequal probabilities of selection reduces selection bias. Non-response was accounted for using geographic factors. Demographic factors such as age, gender, and census region were

used to calculate the post-stratification weights, ensuring that the distribution of the sample corresponded to the distribution of the U.S. for these demographic characteristics. These adjustments resulted in the weighted NSAL sample being representative of African-Americans living in the contiguous U.S.

Complex survey design measures were used to estimate the variance correctly (Heeringa & Berglund). Chi-square and t-tests for complex samples determined whether the sex difference for each descriptive characteristic was statistically significant. Logistic regression for complex samples was used to compute odds ratios (OR) and 95% confidence intervals (CI) for the association of walking with depressive symptoms, while controlling for personal and environmental factors. Statistical significance was set at $p < .05$ on a two-sided design-based test. Analyses were performed in STATA 10.0 (StataCorp, College Station, TX USA).

Results

Compared to men, women reported more disability and family history of depression, and lower household incomes (Table 1). There were statistically significant sex differences in both BMI and gardening/yard work. A greater percentage of women reported being underweight ($\chi^2[34] = 8.2, p = .0071$) and obese ($\chi^2[34] = 39.5, p < .0001$), while a greater percentage of men reported being overweight ($\chi^2[34] = 34.0, p < .0001$). A greater percentage of women reported never participating in gardening/yard work ($\chi^2[34] = 88.9, p < .0001$), while a greater percentage of men reported often participating in gardening/yard work ($\chi^2[34] = 120.3, p < .0001$).

Table 1. Sample Characteristics of African-Americans: The National Survey of American Life, 2001–2003.

	Mean (confidence interval)			
	Women (n = 1,844)	Men (n = 1,059)	t	p
Age	42 (41–43)	41 (40–43)	0.3	.61
Disability	4.7 (4.0–5.4)	3.6 (2.8–4.3)	5.3	.0275
Household Income *	32,446 (30,143–34,749)	42,480 (38,610–46,350)	38.4	< .0001
Neighborhood safety	3.1 (3.0–3.2)	3.1 (3.0–3.2)	1.5	.24
	No. (%)		χ^2	p
Family history of depression	550 (61.3)	247 (38.7)	7.7	.0090
Body mass index			17.4	< .0001
< 18.5	37 (1.4)	13 (0.4)		
18.5–24.9	490 (14.5)	291 (12.7)		
25.0–29.9	544 (16.7)	454 (18.1)		
30 +	773 (22.1)	301 (13.4)		
National region			1.3	.27
West	113 (4.7)	86 (5.0)		
Northeast	207 (8.7)	123 (6.8)		
Midwest	292 (10.1)	157 (7.4)		
South	1232 (31.1)	693 (26.2)		
Gardening/Yard work			38.2	< .0001
Never	883 (26.8)	349 (14.8)		
Rarely	294 (9.0)	130 (6.2)		
Sometimes	384 (11.0)	253 (10.7)		
Often	283 (7.8)	327 (13.7)		

*Top coded at \$200,000.

Compared with women who reported never participating in gardening/yard work, the OR for depressive symptoms in women who reported often participating in gardening/yard work was 0.54 in crude analyses (Table 2). However, the model was not significant, and gardening/yard work was not associated with depressive symptoms when biological and/or social factors were controlled. Women had lower OR for depressive symptoms when they were older, reported more income, and had better neighborhood safety. Women had a higher OR for depressive symptoms when they reported more disability, a family history of depression, and a BMI less than 18.5.

Table 2. Odds Ratios for Depressive Symptoms in Relation to Gardening/Yard Work in African-American Women: The National Survey of American Life, 2001–2003.

Variable	African-American women (n = 1,844)							
	CESD11 ≥ 9 OR	95% CI	CESD11 ≥ 9 OR	95% CI	CESD11 ≥ 9 OR	95% CI	CESD11 ≥ 9 OR	95% CI
Gardening/Yard work								
Never	1.00		1.00		1.00		1.00	
Rarely	0.79	0.57– 1.10	0.79	0.55– 1.12	1.05	0.75– 1.47	1.02	0.72– 1.45
Sometimes	0.88	0.68– 1.15	1.03	0.78– 1.36	1.03	0.77– 1.38	1.19	0.89– 1.60
Often	0.54*	0.38– 0.91	0.70	0.43– 1.16	0.67	0.42– 1.05	0.81	0.50– 1.32
Personal factors								
Age			0.98*	0.97– 0.99			0.98*	0.97– 0.99
Family history of depression			1.73*	1.18– 2.54			1.93*	1.33– 2.81
BMI								
< 18.5			3.04*	1.40– 6.62			3.36*	1.46– 7.71
18.5–24.9			1.00	–			1.00	–
25.0–29.9			1.36	0.89– 2.09			1.35	0.86– 2.12
30 +			1.55*	1.08– 2.23			1.44	0.98– 2.11
Disability			1.03*	1.02– 1.03			1.02*	1.01– 1.03
Environmental factors								
Household income					a	b	c	d
					*		*	
Neighborhood safety					0.79*	0.69– 0.89	0.82*	0.72– 0.93
National region								
West					1.00		1.00	

Midwest					1.48	0.70– 3.11	1.52	0.78– 3.00
South					1.24	0.61– 2.52	1.33	0.72– 2.45
Northeast					1.29	0.58– 2.85	1.27	0.61– 2.65
	p = .08		p = .0002		p < .0001		p < .0001	

Note. CESD11 = Center for Epidemiologic Studies Depression Scale, 11 items in National Survey of American Life; OR = odds ratio; CI = 95% confidence interval; OR greater than 1 indicates greater odds of more depressive symptoms, while OR less than 1 indicates lesser odds of less depressive symptoms. *p < .05. a= 0.9999771 OR. b= 0.9999697–0.9999844 CI. c= 0.9999761 OR. d= 0.9999684–0.9999839 CI.

Compared with men who reported never participating in gardening/yard work, the OR for depressive symptoms in men who reported often participating in gardening/yard work was 0.59 and 0.64 in crude analyses and when controlling for social factors respectively (Table 3). However, gardening/yard work was not associated with depressive symptoms when biological factors were controlled. Men had lower OR for depressive symptoms when they reported more income and better neighborhood safety. Men had a higher OR for depressive symptoms when they reported more disability and a family history of depression.

Table 3. Odds Ratios for Depressive Symptoms in Relation to Gardening/Yard Work in African-American Men: The National Survey of American Life, 2001–2003.

Variable	African-American men (n = 1,059)							
	CESD10 ≥ 8 OR	95% CI	CESD10 ≥ 8 OR	95% CI	CESD10 ≥ 8 OR	95% CI	CESD10 ≥ 8 OR	95% CI
Gardening/Yard work								
Never	1.00		1.00		1.00		1.00	
Rarely	0.84	0.46– 1.54	0.91	0.51– 1.69	0.86	0.45– 1.64	0.95	0.50– 1.80
Sometimes	0.92	0.58– 1.43	1.06	0.67– 1.69	0.98	0.58– 1.65	1.09	0.65– 1.84
Often	0.59*	0.40– 0.87	0.67	0.44– 1.04	0.64*	0.41– 0.98	0.71	0.45– 1.12
Personal factors								
Age			0.99	0.98– 1.00			0.99	0.98– 1.00

Family history of depression			1.59*	1.11– 2.28			1.50*	1.03– 2.18
BMI								
< 18.5			0.33	0.28– 3.81			0.22	0.02– 2.78
18.5–24.9			1.00	–			1.00	–
25.0–29.9			0.98	0.65– 1.48			1.00	0.66– 1.51
30 +			0.97	0.61– 1.55			1.02	0.62– 1.67
Disability			1.02*	1.01– 1.03			1.02*	1.01– 1.03
Environmental factors								
Household income					a*	b	c*	d
National region								
West					1.00		1.00	
Midwest					1.88	0.83– 4.24	1.92	0.81– 4.59
South					1.50	0.69– 3.25	1.59	0.70– 3.65
Northeast					0.88	0.34– 2.30	0.91	0.33– 2.50
Neighborhood safety					0.78*	0.64– 0.96	0.80*	0.66– 0.98
	p = .05		p = .0008		p = .02		p = .0074	

Note. CESD10 = Center for Epidemiologic Studies Depression Scale, 10 items in National Survey of American Life; OR = odds ratio; CI = 95% confidence interval; OR greater than 1 indicates greater odds of more depressive symptoms, while OR less than 1 indicates lesser odds of less depressive symptoms. *p < .05. a= 0.9999872 OR. b= 0.99997–0.9999959 CI. c= .9999988 OR. d= .999979–0.9999971 CI.

Discussion

Participating in gardening/yard work often was associated with decreased odds of depressive symptoms in African-American women in crude analyses, but this was not supported when models were adjusted for biological and social factors. The current results contradict previous cross-sectional studies that found frequency of physical activity (Farmer et al., 1988), sports/exercise (Torres et al., 2013), and walking (Torres et al., in press) were associated with decreased odds of depressive symptoms in African-American women when controlling for similar biological and social factors. Only 7.8% of African-American women in the current sample reported participating in gardening/yard work often, which may explain the lack of results. African-American women who are younger, have a disability or family history of depression, are underweight, have lower income, and live in less safe neighborhoods had increased risk for depressive symptoms. Any potential association between gardening/yard work and depressive symptoms could be masked by these issues, which may need to be addressed before African-American women are able to participate in gardening/yard work more frequently.

Frequent participation in gardening/yard work was associated with decreased odds of depressive symptoms in African-American men in crude analyses and when controlling for social factors, but not when controlling for biological factors. The current results coincide with a previous study that found no association between walking frequency and depressive symptoms (Torres et al., in press), but contradict previous studies that found frequency of physical activity (Farmer et al., 1988) and sports/exercise (Torres et al., 2013) were associated with decreased odds of depressive symptoms in African-American men when controlled for similar biological and social factors. African-American men who report more disability, a family history of depression, lower income, and less safe neighborhoods are more at risk for depressive symptoms. African-American men reported significantly higher household incomes than African-American women, which may serve as a buffer against unsafe neighborhoods. This may explain why gardening/yard work was associated with decreased odds of depressive symptoms in African-American men in crude analyses and when controlling for social factors, but not when controlling for biological factors. In addition, the percentage of men who reported participating in gardening/yard work often was almost double that of women and may contribute to the different results between women and men. Despite the protective effects of higher income, African-American men who report more disability and a family history of depression are still at increased risk for depressive symptoms. This may need to be addressed before the potentially protective effects of gardening/yard work can be fully evaluated in African-American men.

An implication of this study finding is that nurses should tailor health promotion programs towards African-Americans who are at increased risk for depressive symptoms. For example, since disability increases the risk for depression, nurses can provide access to community resources for affordable and/or supportive housing and assistance to make a home more accessible, accessible transportation, assistive technology and employment resources for people with disabilities. It is important to note that African-Americans with disabilities who have a family history of depression are especially at risk.

There are several limitations to this study. Generalization of results is limited to community-dwelling adults living in the U.S. who self-identified as African-American and who did not meet diagnostic criteria for depression. Due to the cross-sectional design, it is not possible to determine causality. However, by excluding clinically-depressed individuals, the possibility that depressive symptoms influenced gardening/yard work (Roshanaei-Moghaddam et al., 2009) was minimized. All measures were based on self-reported data.

Another limitation centers on the definition of gardening/yard work and how it was measured. Frequency of gardening in the NSAL was measured via one question without established psychometrics or reference to a time frame, intensity, or duration. In addition, within the single question respondents were asked how often they

worked in the garden or yard. Gardening may be conceptually different than yard work. For example, gardening may be thought of as a hobby, while yard work may be thought of as a chore. Gardening is considered a moderately to very pleasant activity and has been associated with happiness (Onishi et al., 2006). Yard work was not associated with depressive symptoms in African-Americans (Izquierdo-Porrera et al., 2002). Future studies should distinguish between gardening and yard work.

Finally, although the current study found sex differences, it may be that those with higher income (men) are more likely to participate in gardening than those with lower income. Perhaps those with higher income are more likely to own a home and have access to a garden. If gardening is shown to be effective in decreasing depressive symptoms, greater accessibility to gardening, perhaps through community gardens, would be a significant contribution to improved public health (Armstrong, 2000a, Armstrong, 2000b, Johnson and Smith, 2006, Lombard et al., 2006, Twiss et al., 2003, Wakefield et al., 2007), given the high toll of depression and depressive symptoms.

Despite these limitations, the current study has many strengths. The NSAL sample comprises a nationally representative sample of African-Americans (Jackson et al., 2004). Face-to-face interviews matched race/ethnicity among interviewers and respondents. The recruitment of local, indigenous Black interviewers was important to address possible variations in interview quality due to social class, geographical, and cultural differences. A unique type of physical activity was examined, i.e. gardening/yard work, which is more independent of health status and hence more widely accessible than many other activities. Evidence supports the validity and reliability of the CESD in the NSAL (Torres, 2012). Finally, results support using multi-level ecological models as an integrative and broad approach to understanding the mechanisms by which personal and environmental factors affect well-being (Stokols, 1992). The modified Social Ecology of Health Promotion framework was used to identify factors a priori that were associated with depressive symptoms in African-Americans (Torres et al., 2010). Personal factors, specifically biogenetic (age, family history of depression, BMI and disability) and behavioral (physical activity, i.e. gardening/yard work), as well as environmental factors, specifically sociocultural (household income and neighborhood safety) were associated with odds of depressive symptoms in African-Americans.

Nurses are in a strategic position to provide assessment and nursing interventions to promote mental health and prevent depression in African-Americans. Mental health practitioners can focus on addressing biological and social factors that increase the risk for depression so that African-Americans can participate in activities that promote mental health.

Conflicts of interest

None.

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