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Engagement in Mindfulness Practices by U.S. Adults: Sociodemographic Barriers

Henry A. Olano, BA,[1] Diana Kachan, PhD,[1] Stacey L. Tannenbaum, PhD,[2] Ashwin Mehta, MPH, MD,[2] Debra Annane, MPH, MA, RYT,[2] and David J. Lee, PhD[1,2]

Abstract

Objective: To examine the effect of sociodemographic factors on mindfulness practices.
Methods: National Health Interview Survey Alternative Medicine Supplement data were used to examine sociodemographic predictors of engagement in meditation, yoga, *tai chi*, and *qigong*.
Results: Greater education was associated with mindfulness practices (odds ratio [OR], 4.02 [95% confidence interval [CI], 3.50–4.61]), men were half as likely as women to engage in any practice, and lower engagement was found among non-Hispanic blacks and Hispanics.
Conclusion: Vulnerable population groups with worse health outcomes were less likely to engage in mindfulness practices.

Introduction

Mindfulness practices, which involve nonjudgmental awareness of the present moment, have been gaining popularity among Americans.[1,2] Yoga, *tai chi*, *qigong*, and meditation are mindfulness-based practices that improve physical and mental health outcomes.[3–8] The prevalence of mindfulness practice engagement varies across sociodemographic groups.[1] However, the multivariable effects of individual-level factors on the likelihood of engagement in mindfulness practices have not been examined. This study expands on previous descriptive studies to examine multivariable associations between sociodemographic factors and the likelihood of mindfulness practices and to identify existing gaps in the distribution of such practices.

Materials and Methods

The National Health Interview Survey (NHIS) is a continuous multipurpose survey representative of the U.S. civilian noninstitutionalized population. The NHIS collects information on individuals' sociodemographic and health characteristics. During survey years 2002, 2007, and 2012, the Alternative Medicine Supplement was included as a part of the NHIS assessment of 12-month engagement in various complementary and alternative medicine practices (yes/no). Practices included mindfulness-based meditation, as well as mind–body exercise activities containing a mindfulness element (e.g., yoga, *tai chi*, *qigong*). NHIS Alternative Medicine Supplement data for adults aged 18 years or older were pooled to examine the effect of the following predictors on the odds of engagement in each of these practices: age (continuous), sex, race/ethnicity (white non-Hispanic, black non-Hispanic, Hispanic, Asian, other), education (less than high school, high school or equivalent, beyond high school), and household income (as a ratio to current poverty level). Questions assessing meditation practices changed substantially in 2012; therefore, only 2002 and 2007 data were used to model meditation outcomes and the odds of all four practices combined.

Univariate and multivariable logistic regressions were used to calculate odds ratios (ORs) and 95% confidence intervals (CIs) and thereby identify groups most likely to engage in the four practices. Odds ratios greater than 1 imply that individuals with a certain characteristic exposure were more likely to engage in a given practice than those without that exposure. Conversely, an odds ratio less than 1 means that the individuals with a certain characteristic exposure were less likely to engage in a given practice than those without that exposure. Analyses were performed by using SAS software, version 9.3 (SAS Institute Inc., Cary, NC) and were adjusted for survey year, design effects, and sample weights as specified by Botman and Jack.[9]

Results

A total of 69,149 participants (representing approximately 170 million adults) responded to questions about engaging

[1]Department of Public Health Sciences, University of Miami, Miller School of Medicine, Miami, FL.
[2]Sylvester Comprehensive Cancer Center, University of Miami, Miller School of Medicine, Miami, FL.

Table 1. Engagement in Mindfulness Practices in the United States: Pooled Data from the 2002, 2007, and 2012 Complementary and Alternative Medicine Supplement of the National Health Interview Survey

Exposure	*Frequency* (n)	*Weighted* (n)	*Percentage (SEM)*
Sex			
Women	38,156	86,510,899	51.0 (0.26)
Men	30,993	83,219,900	49.0 (0.26)
Race/ethnicity			
White	43,189	119,013,045	70.1 (0.32)
Hispanic	11,808	22,213,675	13.1 (0.24)
Black	10,184	19,408,790	11.4 (0.21)
Asian	3,287	7,498,562	4.4 (0.11)
Other	681	1,596,726	0.9 (0.08)
Education			
High school	18,407	46,346,249	27.3 (0.24)
Less than high school	11,773	25,023,963	14.7 (0.22)
Beyond high school	38,969	98,360,587	58.0 (0.32)
Mindfulness practice in past 12 months			
Meditation	5,053[a,b]	12,623,922	7.6 (0.15)
Yoga	5,047[a]	12,468,704	7.5 (0.15)
Tai chi	905[a]	2,033,347	1.2 (0.05)
Qigong	256[a]	546,975	0.3 (0.03)
Any of 4 practices	8,754[a,b]	21,727,627	13.1 (0.19)
	n	*Mean age (SEM)*	
Age	69,149	45.0 (0.11)	

[a]Number of respondents engaging in the mindfulness practice in the past 12 months.
[b]Data from survey years 2002 and 2007 were used.
SEM, standard error of mean age.

Table 2. Likelihood of Engagement in Mindfulness Practices in the United States by Sociodemographic Status Based on Survey Years 2002, 2007, and 2012 of the Alternative Medicine Supplement of the National Health Interview Survey

Variable	*Odds Ratio (95% CI)*	
	Univariate analysis[a]	*Multivariable analysis*[b]
Meditation in last 12 months[c]		
Age	0.99 (0.99–1.00)	1.00 (0.99–1.00)
Sex (male vs. female)	0.73 (0.68–0.79)	0.72 (0.67–0.79)
Race ethnicity		
Hispanic vs. white	0.57 (0.49–0.65)	0.70 (0.59–0.83)
Black vs. white	0.94 (0.84–1.05)	0.96 (0.85–1.10)
Asian vs. white	1.10 (0.92–1.31)	1.00 (0.82–1.24)
Other vs. white	1.50 (1.04–2.17)	1.57 (1.02–2.41)
Education		
High school vs. less than high school	1.80 (1.53–2.12)	1.61 (1.31–1.98)
Beyond high school vs. less than high school	4.29 (3.70–4.96)	3.73 (3.10–4.50)
Income-to-poverty ratio	1.04 (1.03–1.06)	1.01 (1.00–1.02)
Yoga in last 12 months		
Age	0.98 (0.98–0.98)	0.97 (0.97–0.98)
Sex (male vs. female)	0.33 (0.31–0.36)	0.31 (0.28–0.34)
Race/ethnicity		
Hispanic vs. white	0.50 (0.45–0.55)	0.64 (0.56–0.73)
Black vs. white	0.51 (0.46–0.56)	0.55 (0.49–0.62)
Asian vs. white	1.40 (1.23–1.61)	1.17 (1.00–1.37)
Other vs. white	0.96 (0.69–1.35)	1.04 (0.73–1.47)
Education		
High school vs. less than high school	2.39 (1.90–3.01)	1.73 (1.34–2.22)
Beyond high school vs. less than high school	8.83 (7.08–11.00)	5.01 (3.92–6.40)
Income-to-poverty ratio	1.09 (1.08–1.10)	1.07 (1.05–1.08)
Tai chi in last 12 months		
Age	1.00 (1.00–1.01)	1.01 (1.00–1.01)
Sex (male vs. female)	0.87 (0.75–1.02)	0.91 (0.77–1.07)
Race/ethnicity		
Hispanic vs. white	0.55 (0.44–0.70)	0.74 (0.57–0.98)
Black vs. white	0.94 (0.76–1.18)	1.05 (0.83–1.34)
Asian vs. white	2.42 (1.88–3.10)	2.28 (1.72–3.02)
Other vs. white	2.29 (1.36–3.83)	3.01 (1.80–5.04)
Education		
High school vs. less than high school	1.79 (1.19–2.68)	1.65 (1.05–2.60)
Beyond high school vs. less than high school	5.13 (3.61–7.29)	4.63 (3.12–6.88)
Income-to-poverty ratio	1.05 (1.03–1.08)	1.01 (0.98–1.03)
Qigong in last 12 months		
Age	1.01 (1.00–1.01)	1.01 (1.00–1.02)
Sex (male vs. female)	0.92 (0.70–1.21)	0.92 (0.67–1.25)
Race/ethnicity		
Hispanic vs. white	0.50 (0.29–0.85)	0.69 (0.35,1.37)
Black vs. white	0.52 (0.33–0.83)	0.56 (0.32–0.95)
Asian vs. white	1.90 (1.24–2.92)	1.80 (1.07–3.05)
Other vs. white	1.57 (0.52–4.79)	2.21 (0.74–6.62)
Education		
High school vs. less than high school	1.86 (0.74–4.71)	1.34 (0.50–3.58)
Beyond high school vs. less than high school	7.23 (3.05–17.15)	5.04 (2.04–12.47)
Income-to-poverty ratio	1.07 (1.03–1.11)	1.01 (0.97–1.05)
Any of 4 practices in last 12 months[c]		
Age	0.99 (0.99–0.99)	0.99 (0.99–0.99)
Sex (male vs. female)	0.57 (0.53–0.61)	0.55 (0.51–0.60)
Race/ethnicity		
Hispanic vs. white	0.51 (0.45–0.57)	0.64 (0.55–0.74)
Black vs. white	0.78 (0.70–0.85)	0.80 (0.72–0.90)
Asian vs. white	1.32 (1.14–1.54)	1.19 (1.00–1.42)
Other vs. white	1.38 (0.99–1.92)	1.48 (1.00–2.19)
Education		
High school vs. less than high school	1.87 (1.63–2.16)	1.57 (1.32–1.88)
Beyond high school vs. less than high school	5.19 (4.56–5.91)	4.01 (3.40–4.73)
Income-to-poverty ratio	1.06 (1.05–1.07)	1.02 (1.01–1.03)

[a]This model was adjusted for survey year.
[b]This model was adjusted for all listed variables.
[c]Data from survey years 2002 and 2007 were used.
CI, confidence interval.

in meditation, yoga, *tai chi*, and *qigong* during the previous 12 months (Table 1). The prevalence of practices ranged from 0.3% (*qigong*) to 7.6% (meditation), with 13.1% of adults engaging in at least one of the practices. In univariate analyses, all predictors examined were significantly associated with all of the outcomes, with few exceptions: *Tai chi* and *qigong* practice were not significantly predicted by participants' age and sex (Table 2). After adjustment for all other predictors, education beyond high school compared

to less than HS was associated with the greatest increase in the odds of engaging in any of the practices (OR, 4.01 [95% CI, 3.40–4.73]), as well as in each practice individually. High school education was associated with a smaller increase in the odds of all individual outcomes except *qigong*. Men were approximately half as likely as women to engage in any of the practices (OR, 0.55 [95% CI, 0.51–0.60]) and more than three times less likely to practice yoga (OR, 0.31 [95% CI, 0.28–0.34]). Significantly lower odds of engagement in any practice were associated with black and Hispanic race/ethnicity when compared with non-Hispanic white, while Asians had higher odds of engaging in all practices except meditation. With each year of age, the odds of practicing yoga decreased slightly (OR, 0.97 [95% CI, 0.97–0.98]), while the odds of doing *tai chi* increased (OR, 1.01 [95% CI, 1.00–1.01]). Household income level was positively associated with slightly higher odds of yoga practice (OR, 1.07 [95% CI, 1.05–1.08]).

Discussion

These results allowed identification of specific vulnerable population groups that are less likely to engage in mindfulness practices and thereby attain potential health benefits. These groups included participants with low education levels and those of Hispanic or non-Hispanic black race/ethnicity.

Education beyond high school was significantly associated with increased engagement in mindfulness-based practices. Non-Hispanic whites were more likely to engage in any of the four practices compared with Hispanics and non-Hispanic blacks. A report on the current state of health disparities in the United States shows that education level and race/ethnicity are predictors of poor health outcomes.[10] In parallel, population subgroups with worse health outcomes also are less likely to engage in mindfulness practices. The current study appears to be the first examination of sex disparities in mindfulness practice that controlled for other sociodemographic factors; men were found to be less likely than women to engage in mindfulness practices.

In conclusion, minorities and men should be considered priority populations for mindfulness-based interventions. Additional research in mindfulness-based interventions targeting medically underserved and vulnerable populations is warranted.

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Address correspondence to:
Henry A. Olano, BA
Department of Public Health Sciences
University of Miami
Miller School of Medicine
1120 NW 14th Street, Room 909
Miami, FL 33136

E-mail: h.olano1@med.miami.edu