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Yoga participation and health-related quality of life

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ABSTRACT

Purpose: Limited epidemiological investigations have examined the association of yoga participation and health-related quality of life (HRQOL), which was the purpose of this study. **Methods:** Data from the 2001-2006 National Health and Nutrition Examination Survey were employed (n = 14,455). Yoga participation and HRQOL were assessed via self-report. **Results:** After adjustments, in the entire sample (n = 14,455), yoga participation was not associated with better HRQOL ($\beta_{adjusted} = -0.17$; 95% CI: −0.60-0.24; P = 0.40). When stratified by those above the mean age (≥ 45 years; N_{total} = 7,072; N_{yoga} = 67), yoga participation was associated with better HRQOL ($\beta_{adjusted} = -0.69$; 95% confidence CI: –1.29 to -0.09; P=0.02). **Conclusion:** In this national sample, there was some suggestive evidence of a favorable association of yoga participation and HRQOL among middle-age and older adults.

KEY WORDS: Complementary therapy, epidemiology, population

INTRODUCTION

Although inconclusive, there is suggestive evidence that yoga, via its physical activity engagement and stress management ability, may play an important role in influencing various health outcomes such as hypertension [1]. There is also some empirical suggestion that yoga participation may positively influence the overall health-related quality of life (HRQOL) [2]. However, these studies come from relatively small, convenience-based samples. Thus, the purpose of this brief study was to examine the association of yoga participation on HRQOL among a national sample of the U.S. adults.

METHODS

Design and Participants

The present study includes data from the 2001 to 2006 National Health and Nutrition Examination Survey (only cycles at the time of this writing with yoga and HRQOL participation data). Analyzes are based on data from 14,455 adults (18-85 years) who provided complete data for the study variables.

The NHANES is an ongoing survey conducted by the Centers for Disease Control and Prevention that uses a representative sample of non-institutionalized United States civilians selected by a complex, multistage, stratified, clustered probability design. The multistage design consists of 4 stages including the identification of counties, segments (city blocks), random selection of households within the segments, and random selection of individuals within the households. Procedures were approved by the National Center for Health Statistics review board. Consent was obtained from all participants prior to data collection. Further information on NHANES methodology and data collection are available on the NHANES website (http://www.cdc.gov/nchs/nhanes.htm).

Measurement of Yoga

Participants were asked if they engaged in self-perceived moderate or vigorous-intensity yoga (lasting at least 10 min in duration) in the past 30 days. Among those participating in yoga, they were asked to report the number of times they engaged in yoga in the past 30 days and the average duration each time.

Measurement of HRQOL

The CDC HRQOL measure was assessed from 4 questions including 1 question about self-rated health status and 3 about the number of unhealthy days during the past 30 days:

1. "Would you say that in general your health is excellent, very good, good, fair, or poor?"
2. "Now thinking about your physical health, which includes physical illness and injury, how many days during the past 30 days was your physical health not good?"

3. "Now thinking about your mental health, which includes stress, depression, and problems with emotions, how many days during the past 30 days was your mental health not good?"
4. "During the past 30 days, approximately how many days did poor physical or mental health keep you from doing usual activities, such as self-care, work, or recreation?"

The 4 CDC HRQOL items were categorized according to CDC's recommendations, which included question 1 dichotomized as good/excellent health (coded as 0) or poor/fair health (coded as 1). The latter 3 items were dichotomized as 14 or more days (coded as 1) and less than 14 days (coded as 0).

Thus, the recoded 4 HRQOL items ranged from 0 to 1. An overall HRQOL score was created by summing the responses from each of the 4 individual items (range: 0-4), with higher HRQOL scores indicating a worse quality of life. The HRQOL-4 that we used was developed by the CDC and has undergone extensive reliability and validity testing and has demonstrated adequate psychometric properties [3-7].

Analysis

Statistical analyzes were performed via procedures from survey data using Stata (v.12). To account for oversampling, non-response, non-coverage, and to provide nationally representative estimates, analyzes included the use of survey sample weights, clustering, and primary sampling units. Multivariable ordinal regression was used to examine the association of yoga on HRQOL. Covariates included age (continuous; years), gender, race-ethnicity (Mexican American, non-Hispanic white, non-Hispanic black, and other), total physical activity (continuous; MET-min-month), and body mass index (continuous; kg/m^2).

RESULTS

Among the 14,455 participants, the mean age was 44.8 years (standard error [SE]=0.37); mean MET-min-month of physical activity was 4917.6 (SE=147.8); mean HRQOL was 0.41 (SE=0.01); mean body mass index was 28.2 (SE=0.11); 51.3% were female; 72.5% were non-Hispanic white; and 2.1% engaged in yoga (n = 218). The weighted mean (SE) number of times engaging in yoga in the past 30 days was 9.1 (0.7), with the unweighted mean duration being 45.8 min (1.7). Characteristics of the study variables stratified by participation in yoga are shown in Table 1.

After adjustments, in the entire sample (n = 14,455), yoga participation was not associated with better HRQOL ($\beta_{adjusted}$ = –0.17; 95% CI: –0.60-0.24; P = 0.40). When stratified by those above the mean age (≥ 45 years; N_{total} = 7,072; N_{yoga} = 67), yoga participation was associated with better HRQOL ($\beta_{adjusted}$ = –0.69; 95% CI: –1.29-0.09; P = 0.02). Further, analyzes stratified the 4-point HRQOL variable into worse and better HRQOL, with worse HRQOL being those with an HRQOL score ≥ 1 (75^{th}%) and those with better HRQOL having a score of 0. In this multivariable logistic regression analysis, those 45+ years of age who engaged in yoga had a 47% reduced odds (OR = 0.53; P = 0.05) of having worse HRQOL.

Table 1: Characteristics (mean/proportion [95% CI]) of the study participants (n=14,455)

Variable	Not engaging in yoga (n=14,237)	Engaging in yoga (n=218)
Age, mean years	45.0 (44.1-45.7)	38.8 (36.8-40.8)
Female, %	50.6	83.4
White, %	72.3	85.1
Body mass index, mean kg/m^2	28.2 (28.0-28.5)	24.8 (24.1-25.5)
MET-min-month, mean	4828.9 (4529.9-5127.8)	9121.0 (7680.0-10561.9)
HRQOL, mean	0.41 (0.39-0.44)	0.23 (0.15-0.32)

HRQOL: Health-related quality of life, CI: Confidence interval

DISCUSSION

The findings of this short report provide some suggestive evidence that yoga participation, particularly among middle-age and older adults whom due to their older age may be at greater risk for morbidity incidence, may result in better HRQOL. Although this finding is in partial support of other studies [2], these results should be interpreted within the context of the study limitations. Although the present sample is inclusive of a national population, few participants reported engaging in yoga of moderate or higher intensity (lower intensity yoga not evaluated in the survey). Another limitation is the cross-sectional design, rendering temporal sequence not possible. In addition, the type and quality of yoga performed was not evaluated in this study. Finally, common in epidemiological research, there is always the possibility of residual confounding. Future work employing a larger sample of yoga participants is needed to confirm these findings before strong conclusions can be made regarding the potential beneficial effects of yoga on HRQOL.

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