



Prevalence and predictors of yogic breathing and meditation use – A nationally representative survey of US adult yoga practitioners

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ABSTRACT

Introduction: Yoga practice in common usage is often confined to the physical aspects of the comprehensive practice. The purpose of this study was to examine the use of two additional aspects of yoga as part of yoga practice, i.e. yogic breathing and meditation (YoBaM). Prevalence and predictors of YoBaM use among yoga practitioners in the US general population were analyzed.

Method: Cross-sectional data from the 2012 and 2017 National Health Interview Survey (NHIS) (N = 61,267) was used. 12-month prevalence of yoga use and YoBaM use among yoga practitioners were analyzed descriptively for the two cohorts respectively. Logistic regression analyses were used to analyze sociodemographic and health-related predictors of YoBaM use among yoga practitioners.

Results: 12-month prevalence of yoga use and YoBaM use were 8.9 % and 4.8 % respectively in 2012. In 2017, 13.3 % had practiced yoga in the past 12 months and 7.0 % had used YoBaM. Yoga practitioners aged between 50 and 64 compared to being 29 or younger, females, Hispanics and those experiencing mild to severe forms of psychological distress were more likely to use YoBaM as part of their yoga practice. Yoga practitioners living in the Midwest or in a relationship were less likely to use YoBaM.

Conclusion: In recent years, the number of yoga practitioners in the US general population has considerably increased and YoBaM use is common among yoga practitioners. YoBaM use seems to be associated with age, gender, ethnicity, region, marital status and psychological distress dimensions.

1. Introduction

Yoga is an ancient Indian philosophy and way of life that has been adapted for use as a complementary and integrative medicine therapy in the Western world.¹ Increasing research has proven yoga to be beneficial as a preventive and therapeutic tool for a variety of medical conditions.^{2–8} In the West, yoga is often referred to as a mind-body practice, incorporating physical postures (asanas), breathing techniques (pranayama) and meditation (dyana), but often limited to a posture-based physical exercise.¹

While the health benefits of physical exercising are well approved, the active component of yogic breathing and meditation (YoBaM) practice has gained increasing interest among scientists in recent years.⁹ Research suggests that a comprehensive yoga approach, including breathing techniques and meditation besides physical exercises, might be more beneficial for certain medical conditions than physical-exercise-based yoga groups alone.^{9,10} This current analysis aims to present the most recent findings of YoBaM use in the U.S. general

population. In particular, 12-month prevalence of yoga use and prevalence and predictors of YoBaM use were examined to provide more detailed information on the specific elements used in yoga practice.

2. Methods

2.1. Data source

This analysis was based on data from the NHIS 2012 and 2017, a nationally representative survey monitoring the health of the US general population. Across cohorts, a total of 74,983 households were eligible and 61,267 adults provided data on yoga use (response rate 81,7 %). The prevalence of recent yoga practice was determined with the question: *DURING THE PAST 12 MONTHS, did you practice Yoga for yourself?* Those who answered 'Yes' were further queried about the use of breathing exercises and meditation as part of their yoga practice: *Did you do breathing exercises as part of Yoga? Breathing exercises may involve actively controlling the way air is drawn in, or the rate or depth of breathing.* and *Did*

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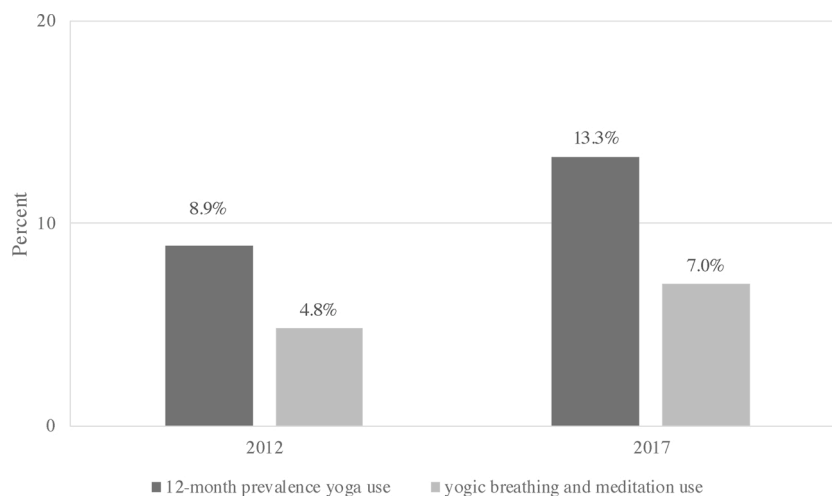


Fig. 1. 12-month prevalence of yoga use and yogic breathing and meditation use for 2012 (n = 34,525) and 2017 (n = 26,742) respectively (percentage of respondents).

Table 1

Independent predictors of Yogic Breathing and Meditation use among yoga practitioners as per logistic regression analysis. Odds Ratios (OR) and 95 % confidence intervals (CI) for having used yogic breathing and meditation are presented.

	Yogic breathing and meditation use (12 months) OR (95 % CI)
Age	
18-29	Reference
30-39	1.08 (0.93; 1.26)
40-49	1.16 (0.99; 1.35)
50-64	1.35 (1.17; 1.56)
65 or greater	1.16 (0.99; 1.35)
Gender	
Male	Reference
Female	1.26 (1.13; 1.41)
Ethnicity	
White	Reference
Hispanic	1.31 (1.11; 1.55)
Black	0.94 (0.79; 1.11)
Asian	1.06 (0.87; 1.30)
Others	0.69 (0.44; 1.10)
Region	
West	Reference
Northeast	0.98 (0.85; 1.13)
Midwest	0.75 (0.66; 0.86)
South	0.90 (0.79; 1.03)
Marital status	
Not in relationship	Reference
In relationship	0.76 (0.69; 0.85)
Kessler Psychological Distress Scale (K10)^a	
Well	Reference
Mild	1.23 (1.04; 1.46)
Moderate	1.55 (1.19; 2.02)
Severe mental disorder	1.39 (1.04; 1.85)

^a Kessler Psychological Distress Scale (K10): 10-item self-report questionnaire intended to yield a global measure of psychological distress (likelihood of having a mental health disorder), based on questions about anxiety and depressive symptoms that a person has experienced in the most recent 4 week period ^{20,21}.

you do meditation as part of Yoga?.

2.2. Statistical analysis

Frequencies were analyzed descriptively for 12-month prevalence of yoga use and YoBaM use for the two cohorts respectively (Fig. 1). Independent sociodemographic and health-related predictors of YoBaM were identified using explorative backward multiple logistic regression analysis. Ten variables were considered as potential predictors (age, gender, ethnicity, region, education, employment status, marital status, health status, psychological distress and chronic medical condition). Only those variables associated with YoBaM use at $p \leq 0.10$ (χ^2 -test) were included in the analyses. The final model included factors independently associated with yoga use (p -value of ≤ 0.05). Statistical analysis was performed in 2020 using SPSS, version 25.0.

3. Results

The 12-months prevalence of yoga use across cohorts was 10.8 % (n = 6,632). Prevalence increased from 8.9 % (n = 3,080) in 2012 to 13.3 % (n = 3,552) in 2017. YoBaM was used by 5.7 % (n = 3,509) across cohorts, 4.8 % (n = 1,644) in 2012 and 7.0 % (n = 1,865) in 2017 (Fig. 1).

Independent predictors of YoBaM use among yoga practitioners in the past 12 months are presented in Table 1. Yoga practitioners aged between 50 and 64 (odds ratio [OR] = 1.35) were more likely to have used YoBaM compared to being 29 or younger. Females (OR = 1.27) compared to males, Hispanics (OR = 1.31) compared to Whites, and those experiencing mild (OR = 1.25), moderate (OR = 1.60) or severe (OR = 1.46) forms of psychological distress compared to those without distress symptoms were also more likely to have used YoBaM as part of their yoga practice. Yoga practitioners from the Midwest (OR = 0.75) compared to practitioners from the West or in a relationship (OR = 0.76) compared to those not in a relationship were less likely.

4. Discussion

Consistent with previous research, findings indicate that yoga is gaining increased popularity over the past decades,^{11,12} with approximately half of yoga practitioners also using YoBaM as part of their practice.

Predictors of YoBaM use are partly comparable to predictors of yoga use in general found in previous yoga surveys.^{13,14} Consistent with earlier findings that yoga users were more likely to be women and from

the West,^{13,14} these groups also seem to embrace yoga more fully, incorporating multiple components. Comparable to earlier results that yoga use was less common among people being in a relationship,¹³ these practitioners were also less likely to practice YoBaM. Practicing comprehensive yoga, i.e. applying different elements of it may demand additional lifestyle and behavior changes or time allocation that might be less compatible with being in a relationship.

Furthermore, people experiencing symptoms of psychological distress were more likely to use YoBaM as part of their practice. As reported earlier, yoga is most commonly used to treat mental health conditions and the main reported outcomes of yoga practice are reduced stress and improved health or well-being.^{13,14} Previous findings suggest that yogic breathing and meditation use has beneficial effects on mental health conditions^{15–17} and may provide additional value, complementing yoga exercises.^{9,10} Yoga practitioners experiencing psychological distress may regard a comprehensive yoga approach as an effective self-management strategy to treat and improve their symptoms.

Age group and ethnicity as predictors of YoBaM use, in contrast, were not consistent with current literature in this area. Although previous findings reported that Hispanics are less likely to practice yoga compared to Whites,^{13,14} Hispanic practitioners were more likely to practice YoBaM. A possible explanation might be the unclear methodology used in surveys. In previous studies people were usually queried about their general yoga use¹³ or yoga use in the context of sports and exercise¹⁸ for example. As yoga is largely identified as a conventional form of exercise, respondents who practiced less active components of yoga (e.g. breath control, meditation) might not report yoga practice.

Furthermore, a qualitative investigation among racial/ethnic minorities identified fear of injury and scheduling difficulties as barriers to yoga engagement among others.¹⁹ YoBaM might be perceived as safer and more accessible by Hispanics compared to the physical aspect of yoga, forms of exercise that can occur more spontaneously in daily life.

Findings further indicate that the use of YoBaM is higher in the upper middle-age, although previous findings indicate a decrease of yoga use with increasing age.^{13,14} As YoBaM are considered to be relatively simple low-impact techniques for addressing a range of health conditions,^{15–17} these yoga exercises might be especially suited for elderly with increasing physical constraints or physical rigor as a form of self-care compared to the physical aspects of yoga.

4.1. Limitations

The NHIS is a cross-sectional study; as such results can only suggest association, not causation. Data drawn from this survey were self-reported so that the risk of recall bias or measurement error cannot be excluded. Furthermore, it was not specifically asked for the use of yoga postures and pranayama techniques; as such it remains unclear in how far people applied yoga poses in addition to breathing techniques and meditation as part of their practice and in which way people practiced yogic breathing. Clearer methodology is necessary in order to identify differences in yoga use and its different components among practitioners.

5. Conclusion

In recent years, the number of yoga practitioners in the US general population has considerably increased. The use of YoBaM is common among yoga practitioners and yoga practitioners using yoga in a more comprehensive way differ from yoga practitioners only using single elements. Further research is needed to investigate the reasons for incorporating different yoga approaches and to examine the additional

benefit of practicing breathing and meditation.

Author statement

MS participated in the conception and design of the study, interpretation of data and drafted the manuscript. HC was responsible for conception and design of the study, analysis and interpretation of data and critically revised the manuscript. All authors have read and approved the final manuscript.

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