Journal of Psychosomatic Research 101 (2017) 104–109

Contents lists available at ScienceDirect

Journal of Psychosomatic Research

journal homepage: www.elsevier.com/locate/jpsychores

Is the practice of yoga or meditation associated with a healthy lifestyle? Results of a national cross-sectional survey of 28,695 Australian women

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ARTICLE INFO

Keywords:
Yoga
Meditation
Health behavior
Exercise
Diet
Survey

ABSTRACT

Objectives: To examine the relationship between yoga/meditation practice and health behavior in Australian women.
Methods: Women aged 19–25 years, 31–36 years, and 62–67 years from the Australian Longitudinal Study on Women's Health (ALSWH) were surveyed regarding smoking, alcohol or drug use, physical activity and dietary behavior; and whether they practiced yoga/meditation on a regular basis. Associations of health behaviors with yoga/meditation practice were analyzed using multiple logistic regression modelling.
Results: 11,344, 8200, and 9151 women aged 19–25 years, 31–36 years, and 62–67 years, respectively, were included of which 29.0%, 21.7%, and 20.7%, respectively, practiced yoga/meditation. Women practicing yoga/meditation were significantly more likely to report at least moderate physical activity levels (OR = 1.50–2.79), to follow a vegetarian (OR = 1.67–3.22) or vegan (OR = 2.26–3.68) diet, and to report the use of marijuana (OR = 1.28–1.89) and illicit drugs in the last 12 months (OR = 1.23–1.98).
Conclusions: Yoga/meditation practice was associated with higher physical activity levels, a higher likelihood of vegetarian or vegan diet use, and a higher likelihood of drug use. While health professionals should keep the potential vulnerability of yoga/meditation practitioners to drug use in mind, the positive associations of yoga/meditation with a variety of positive health behaviors warrant its consideration in preventive medicine and healthcare.

1. Introduction

Non-communicable diseases such as cardiovascular disease, cancer, and type 2 diabetes have become the major causes of mortality worldwide, accounting for almost two thirds of global deaths [1,2]. Major risk factors for non-communicable diseases include modifiable behavioral lifestyle factors such as smoking, risky drinking, unhealthy diet, and insufficient physical activity [2,3]. The World Health Organization (WHO) has defined the reduction of such unhealthy lifestyle behavior as their global target for reducing the incidence of non-communicable disease and subsequent premature death worldwide [1].

Originally rooted in traditional Indian philosophical, spiritual, and health practice [4,5], yoga has become a popular avenue to promote physical and mental well-being worldwide [6,7]. In Europe, Australia and the US, yoga is now most often associated with physical postures (asanas), breathing techniques (pranayama), and meditation (dyana) [4,8]. However, traditionally, yoga is a complex system that also incorporates advice to achieve an ethical and healthy lifestyle [4,5,9]. In particular, yoga's ethical guidelines or 'restraints' [10] include recommending behavior that does not hurt oneself or others [4]. This so-called 'ahimsa' is referred to as nonviolence against all living being – including animals but also the practitioners themselves [4]. Based on these guidelines, several yoga traditions view following a vegetarian diet as an ethical and health necessity to practice yoga because eating meat would induce animal suffering [5,11]. Other behaviors potentially endangering oneself or others, such as smoking, alcohol and drug use, which are also thought to interfere with mental yoga exercises, are also often viewed as incompatible with yoga practice [11]. Overall, a generally healthy lifestyle is frequently recommended in addition to formal yoga exercises [5,12]. Likewise, almost all commonly used meditation practices stem from spiritual/religious traditions such as Buddhism in the case of mindfulness meditation and Hinduism in the case of Transcendental meditation [13]; traditions that also recommend restraining from eating meat and/or from using alcohol or drugs for ethical reasons and because their consumption is believed to interfere with practice [14,15].

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http://dx.doi.org/10.1016/j.jpsychores.2017.07.013
Received 28 February 2017; Received in revised form 25 July 2017; Accepted 26 July 2017

However, few studies have empirically investigated associations of yoga/meditation practice with health behavior, mostly indicating that yoga practitioners might be less likely to smoke and more likely to follow a vegetarian diet and to be physically active than the national norm [16,17]. Conversely, it has been reported that alcohol intake might be higher in yoga practitioners than in non-practitioners [16], while associations of yoga practice with consumption of other drugs has not been investigated. Although meditation is a commonly-used approach to health behavior change [18], we were unable to locate any studies examining relations between meditation practice and health behaviors. Moreover, very few analyses have used nationally representative surveys with adequate non-yoga/meditation control groups, and all of them are from the US and used data from the early 2000s [19,20]. Thus, this study aimed to analyze associations of yoga and meditation practice with health behavior in a large nationally representative sample of Australian women.

2. Methods

The analyses reported here were conducted using data from the Australian Longitudinal Study on Women's Health (ALSWH), which was designed to assess the health and wellbeing and associated factors in Australian women. Ethics approval for the ALSWH was gained from the relevant ethics committees at the University of Newcastle and the University of Queensland. Women in three different age groups (born between: 1921–1926, 1946–1951, and 1973–1978) were randomly selected from the national Medicare database in 1996 [21], with respondents shown to be broadly representative of the national population of women in the respective age cohorts [22]. In 2012, a new cohort was recruited (born between: 1989–1995). Besides age and gender, no further inclusion criteria were defined.

Women were sent the initial survey items by post, two follow-up mailings were sent to non-responders. The surveys contained items regarding use and satisfaction with health care services, life stages and key events, and health behavior.

For the analyses reported here, we focused on 9151 women from the 1946–1951 cohort (Survey 7, 2013), 8200 women from the 1973–1978 cohort (Survey 5, 2009), and 11,345 women from the 1989–1995 cohort (Survey 2, 2014). The oldest cohort could not be included because it did not contain questions around yoga use.

Initial response rates ranged from 42% to 56%, further participants were lost during the course of the study (Fig. 1).

Several of the ALSWH data from the latest surveys have been compared to women of the same age in the Australian population, using data from the Australian Census conducted closest to the survey [23]. While differences between responders and the age matched population can be found in terms of education (respondents being more likely to have tertiary education), marital status (respondents being more likely married), and employment (respondents being more likely to be employed and work longer hours), relative risk estimated for all cohorts did not indicate serious bias due to loss to follow-up [23]. As for the youngest ALSWH cohort (1985–1995) it was stated that they were broadly representative in terms of area of residence, state and territory distribution, marital status and age distribution, with over-representation of women with tertiary education.

2.1. Yoga/meditation practice

The women were asked how often they had practiced yoga/meditation in the last twelve months; they could select *never*, *rarely*, *sometimes* or *often*. For the present analyses, the categories *never* and *rarely* were combined, due to low responses for the *rarely* category.

2.2. Smoking

Women were queried whether they currently smoke cigarettes or tobacco products, or whether they have smoked in the past. Those who reported that they currently smoke were further queried about the frequency and quantity. For the present analyses, those who smoked regularly (on more than one day per week) were compared to those who did not (including occasional smokers).

2.3. Alcohol use

The use of alcohol was determined with a series of questions analyzing frequency and amount of alcohol consumption. Alcohol use was recoded according to the National Health and Medical Research Council (NHMRC) classification, and recoded for the comparisons of those with high risk drinking behavior (including risky drinkers with 2.01 to 4.00 drinks per day and high risk drinkers with > 4.00 drinks per day) vs. those without (including non-drinkers and low risk drinkers with up to 2.00 drinks per day).

2.4. Marijuana use

Women in the 1973–1978 and the 1989–1995 cohorts were asked whether they had used marijuana (cannabis, hash, grass, dope, pot, yandi) for non-medicinal purposes; they could choose between *never*, > 12 *months ago*, *in the last* 12 *months*. In the present analyses, those who used marijuana in the past 12 months were compared to those who did not.

Recreational marijuana use is illegal in Australia as was medicinal use at the time of the surveys.

2.5. Illicit drug use

Women in the 1973–1978 and the 1989–1989 cohorts were asked whether they had used illicit drugs (amphetamines, LSD, natural hallucinogens, tranquilizers, cocaine, ecstasy, inhalants, heroin or barbiturates) for non-medicinal purposes; they could choose between *never*, > 12 *months ago*, *in the last* 12 *months*. In the present analysis, those who used illicit drugs in the past 12 months were compared to those who did not.

Women in the 1973–1978 cohort had also been asked to specify which illicit drugs they had used in an earlier survey (2006); those data were analyzed descriptively to provide more information on the most commonly used illicit drugs but were not included in the regression analysis.

2.6. Physical activity

Physical activity was assessed by a series of questions regarding the types of activity (walking, moderate activities, vigorous activities), and frequency/duration of those activities within the past week. Based on those numbers, women were categorized into physically active (at least 150 min. of moderate physical activity per week) and low activity/sedentary (< 150 min. of moderates physical activity per week) [24].

2.7. Dietary behavior

Dietary behavior was analyzed using data from the Dietary Questionnaire for Epidemiological Studies Version 2, a 101-item food frequency questionnaire (FFQ) [18,25]. Based on the respondents' usual eating habits in the past 12 months, full-time vegetarians (no meat, poultry, or fish) and vegans (no animal products, including meat, poultry, eggs, dairy products of any kind) were identified based on the frequencies of food items consumed. For the present analysis, two comparisons were made: those who follow a vegetarian diet (including vegans) vs. those who do not; and those who follow a vegan diet vs. those who do not.