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Benefits, barriers and determinants of practicing yoga: A cross sectional study from Kathmandu, Nepal

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ABSTRACT

Background: It has been widely believed that practicing yoga helps to improve individuals' mental and physical health. However, the proportion of people practicing yoga is not encouraging.
Objective: This study investigates the determinants, motivations, benefits and barriers to practicing yoga.
Material and methods: This study is based on a cross sectional survey of 875 individuals in a face-to-face interviews conducted from February to April 2019 in Kathmandu, Nepal. The interviews were conducted using a semi-structured questionnaire, and the statistical analysis of the collected data was done using SPSSV20.
Results: We find that females, older people, people with access to health education and internet, associated with social organization, and receiving yoga-related training are more likely to practice yoga. Major reported benefits of yoga include improvement in body flexibility and balance, a decrease in the level of stress, improvement in the quality of life, body weight maintenance, and improvement in immunity power.
Conclusion: Given that most respondents have been benefited from practicing yoga, we recommend people to incorporate yoga into their daily routine.
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1. Introduction

Globally, the pervasiveness of chronic diseases has been increasing. For instance, the proportion of overweight/obese people have increased significantly. Studies have reported that the proportion of adults with a body-mass index (BMI) of 25 kg/m2 or greater increased between 1980 and 2013 from 28·8% to 36·9% in men, and from 29·8% to 38·0% in women [1]. The number of adults with elevated systolic pressure was estimated to be 874 million in the year 2015, representing a 19% increase in hypertension prevalence compared to that of the year 1990 [2]. Similarly, the prevalence of diabetes has increased by about four times from 1980 to 2014 [3].

It has been scientifically proved that an adequate level of physical activity is necessary for the human body system to function in an optimum way. However, the technological revolution over the last few decades has been making people physically inactive. In 2012, 31·1% of adults globally were physically inactive [4]. Physical inactivity was identified as the fourth leading risk factor for noncommunicable diseases and accounted for more than 3 million preventable deaths in 2009 [5]. Efforts to increase physical activity and promote health have received increasing emphasis. Such efforts have been initiated by governments, non-governmental organizations and the private sector [6,7]. It is equally important at the individual level that people pay attention to their lifestyle and be physically active to improve their health. Over the past few decades practicing yoga has been considered as one of the effective measures to promote individual health [8–16].

A growing body of research evidence supports the belief that practicing yoga improves individuals' physical and mental health. In a study in Thailand, authors reported the effectiveness of a yoga program in terms of reducing stress level, blood pressure, heart rate, and body mass index among a group of hypertensive patients [8]. In another study, a yoga-based stress management training program was found to be effective in terms of improvement in

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immunoglobuline (IgA in saliva) thus enhancing the immunity system [9]. Furthermore, yoga has been reported to have been effective in terms of decreasing anxiety level [10,11] and beneficial effects on blood glucose levels in individuals with diabetes and other chronic health conditions [12,13]. Moreover, yoga has been reported to be effective in relieving symptoms of depression [14] and reducing pain, fatigue and sleep disturbance in hemodialysis patients [15]. When comparing yoga and exercise, yoga has been found to be equal or superior to exercise in relieving certain symptoms associated with diabetes, multiple sclerosis, menopause, kidney disease, and schizophrenia [16].

Originated around 5000 years ago, yoga – the physical, mental and spiritual practice – has been now practiced in various forms around the world. The number of people practicing yoga is increasing over the years. However, the proportion of people practicing yoga is not encouraging. For example, in the United States, the percentage of adults practicing yoga was estimated to be 14.5% in 2017, compared to 13.2% in 2012 and 7.5% in 1998 [17,18]. The lifetime prevalence of yoga practice in Germany was estimated to be 15.1% [19]. A study conducted in western Nepal reported that 28% of 501 proportionally selected patients attending alternative medicine clinics were practicing yoga [20].

Given the compelling evidence of the health benefits of yoga, it is important to motivate more and more people to practice yoga. However, little is known about the determinants and barriers of practicing yoga [21,22]. Using survey-based data from Nepal, this study contributes to the literature by answering the following questions: what socio-economic factors influence individuals to practice yoga? What are the barriers to practice yoga? and what are the benefits of yoga as perceived by the people? Answers to these questions will help to understand the factors that can motivate more people to practice yoga.

2. Materials and methods

2.1. Design

This study is based on primary data collected in a face-to-face survey conducted from February to April 2019 in Kathmandu - the capital city of Nepal.

2.2. Sampling method

The survey was conducted by means of randomly selecting people aged more than 20 years old. The selection of the respondents involved two steps. First, twenty-five different spots that are commonly visited by the public in Kathmandu were identified to cover a diverse range of the population. The selected spots include universities, shopping complexes, hospitals, restaurants, religious places, grocery stores, recreational parks, bus and taxi stations. Then, in the second step, 35 respondents were selected randomly from each spot. One participant was selected in every 10-person visiting the spot, with a total samples size of 875. If two or more individuals from a same family were visiting the spot together, they were counted as one and the interview was conducted with one person only. We did not explicitly specify the upper limit of the age of the participants. The assumption was that very old people that are not able to do yoga do not usually visit the survey locations alone. Moreover, if any persons approached did not respond, they were not included in the sampling frame.

2.3. Tools

The interviews were conducted using a semi-structured questionnaire. The questionnaire consisted of three sections. Section A included basic information about the respondent and her/his family. Section B consisted questions related to respondents' experience with yoga. Section C sought details on the respondents' perceptions of benefits, problems and barriers of practicing yoga. On average, an interview took approximately 15 min to complete.

2.4. Analysis

Of the total sample, we excluded 25 observations from the analysis due to missing information on selected variables under study. To examine the factors influencing yoga practice, we employed a logistic regression (LR) [23] and ordinary least squares techniques (OLS) [24]. The dependent variable in LR is whether an individual practice yoga or not, and in OLS it is the total number of yoga poses practiced by an individual. The same set of independent variables (Table 1) is used in both regressions. The statistical analysis was done using SPSSV20.

3. Results

Survey results show that 56% of the respondents were male. On average, the respondents were 44 years of age (SD ± 9.94) and attained 9 years of schooling (Table 1). The average annual family income of the respondent was Rs 245,923. About 38% of the respondents reported that at least one member of their family and/or

Table 1
Descriptive statistics of the surveyed respondents (n = 850).

Respondents' characteristics	Percent/ mean	95% Confidence Interval
Proportion of male respondents	56%	53%–59%
Age of the respondents in years	44.03	43.42–44.71
Annual income of the respondents' family in Rupee	245923.15	241073.15–250773.15
Education of the respondents in years	8.88	8.71–9.06
Respondents with at least one family member and/or close relatives that have attended formal health education	38%	34%–41%
Respondents having membership in any social groups and/or organization	32%	28%–35%
Respondents not employed for the last 12 months	29%	25%–32%
Respondents with access to internet at home	60%	56%–63%
Height of the respondents in centimeters	164.06	163.44–164.68
Weight of the respondents in Kilograms	62.37	61.72–63.15
Body mass index (BMI) of the respondents	23.31	22.09–23.61
Reported health status of the respondents, measured in the scale of 1–10 where 1 means very unhealthy and 10 means very healthy	5.69	5.59–5.79
Respondents that had attended yoga training	35%	31%–38%
Respondents practicing yoga	42%	38%–45%
Total number of yoga poses practiced by the respondents	8.93	8.78–9.08

close relatives had attended formal health education. 32% of the respondents were a member of at least one social group such as youth club, mothers' group, cooperatives etc. Among the total respondents, 29% were unemployed, 60% had internet access in their home, 35% had received yoga related training, and 42% have been practicing yoga. The average body mass index of the respondents was 23.3.

Among the respondents practicing yoga, 4% have been practicing for less than one year, 12%, 18%, 17% and 14% for 2, 3, 4 and 5 years respectively. 33% have been doing for 6–10 years. A very few (2%) have been doing for more than 10 years. Similarly, among 354 respondents practicing yoga, all have been practicing at least 3 different types of yoga poses. 13%, 71%, 12%, and 4% have been doing 3 to 5, 6 to 10, 11 to 12 and more than 12 different types of yoga poses respectively.

Figure 1 presents the respondents reported benefits, problems, and barriers of yoga. 88% of the respondents practicing yoga reported that yoga has improved their body flexibility and balance. Similarly, respondents believed that yoga-practicing has decreased their level of stress and promotes relaxation (85%), improved quality of life (63%), helped to maintain body weight (58%), and improved immunity power (54%). A few respondents reported problems associated with yoga. 24% of the respondents practicing yoga said that it is difficult to choose the right yoga poses to suit their needs. Similarly, 22% of the respondents reported that it takes a long time to realize the benefits of yoga. 12% of the respondents reported that yoga causes injuries and about 1% said that it deteriorates their health condition. Among the respondents not practicing yoga, 56% of them reported that they are tired due to other works and have no energy to do yoga. Other barriers of practicing yoga as reported by the respondents are lack of time, no need of doing yoga as they are doing other exercises, lack of knowledge about its benefits, do not know how to do yoga, and poor physical/health condition.

Table 2 presents the results of both LR and OLS regressions. In LR, the model correctly predicted 80.6% of the non-practitioner and 67.8% of the practitioners, with the overall predictive accuracy of 75.3%, thus indicating good model fit [23]. Being male has a significant and negative coefficient, implying that males are less likely than females to practice yoga. The coefficient of age is positive and

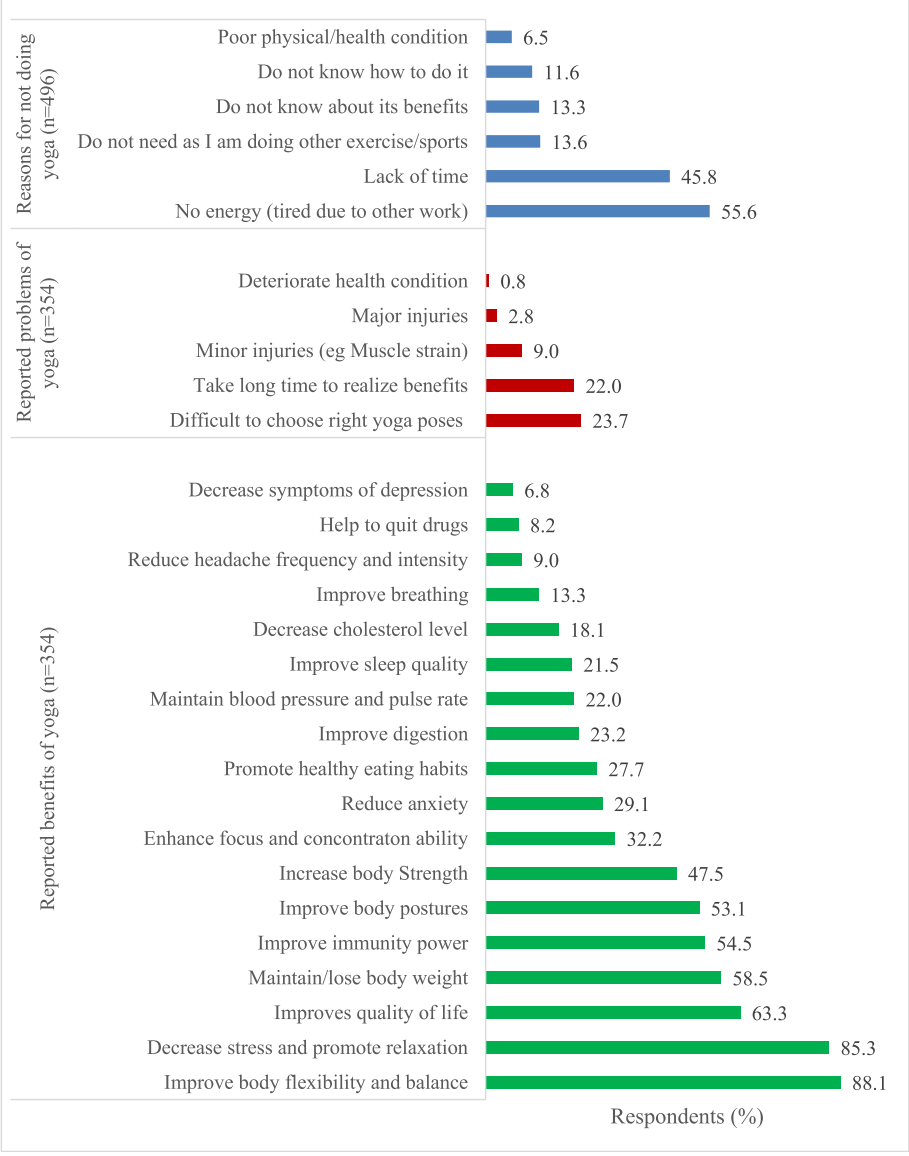

Fig. 1. Respondents percentage by reported benefits, problems and barriers of yoga.

Table 2
Results from logistic and OLS regressions.

Predictor	Logistic regression		OLS	
	Coefficient	S.E.	Coefficient	S.E.
Constant	−11.134***	3.497	3.232	4.141
Gender	−1.476***	0.194	−1.666***	0.236
Age	0.083***	0.009	0.064***	0.01
Income	0.137	0.278	0.085	0.334
Education	−0.046	0.034	−0.096*	0.043
Health education	1.169***	0.183	0.892***	0.218
Membership	0.979***	0.185	0.798***	0.215
Unemployed	−0.251	0.19	−0.45*	0.231
Internet	0.467**	0.177	0.571**	0.221
BMI	0.104	0.121	−0.015	0.026
Health status	0.376***	0.065	0.258***	0.079
Training	0.805***	0.185	1.057***	0.214
−2 Log likelihood	835.138			
Cox & Snell R Square	0.313			
Nagelkerke R Square	0.422			
Adjusted R Square			0.283	

*p < .05; **p < .01; ***p < .001.

significant implying that being older increases the probability of practicing yoga. Surprisingly, the coefficient of education is negative in both the models and is significant in OLS indicating that better-educated people are likely to practice fewer yoga poses than higher educated people. However, our results reveal that individuals with any family members or close relatives who attended health education are more likely to practice yoga than their counterparts. The coefficients of the variables - membership, internet, and training - are all positive and significant in both the models. This reveals that people associated with social organizations, with access to the internet, and those who have received yoga-related training are more likely to practice yoga than those not associated with social organizations, having no access to the internet and not receiving yoga-related training, respectively.

The coefficient of the variable unemployed is negative in both the models and is significant in the OLS model indicating that employed people are more likely to practice a greater number of yoga poses than those that are unemployed. Similarly, the coefficient of the variable health status is positive and significant in both the models revealing that individuals who perceived themselves as healthy are more likely to practice yoga than those who perceived unhealthy.

4. Discussion

Most of the respondents practicing yoga reported that yoga has been beneficial for them. Major reported benefits include improvement in body flexibility and balance, a decrease in the level of stress, improvement in the quality of life, body weight maintenance, improvement in immunity power, etc. These findings on the positive health impact of yoga are in line with previous studies. Yoga has been demonstrated to reduce anxiety [25], bronchial asthma [26], depression [27] and back pain [28]; improve cardiovascular risk factors [8,29], improve sleep [30], increase spinal mobility and flexibility [31] and improve overall well-being, lifestyle and resilience to stress [31–33]. Given the several benefits of yoga, we recommend people to practice yoga in regular basis. However, a limitation of this study is that we have considered yoga in general while different yoga types can have varying impacts on physical and mental health. Another limitation of this study is that the studied sample may not be representative of the whole population in the Kathmandu district as the survey was conducted only in the twenty-five different spots commonly visited by the public.

Although most of the respondents those practicing yoga reported many mental and physical benefits of yoga, only about 42% of the total respondents have been practicing yoga. This indicates the need of raising awareness on the benefits of yoga so that increasing number of people can be benefited. This study empirically investigated the factors influencing people to practice yoga. We find that females, older people, access to health education, access to internet, those associated with social groups, and receiving yoga-related training are more likely to practice yoga than their counterparts. These findings on the influence of different factors on the likelihood of practicing yoga are comparable with the previous studies. For instance, it was reported that yoga use is greatest among women and those with higher socioeconomic status [21]. In Germany, a higher prevalence of yoga was associated with female gender, higher education, employment and living in a major city [19]. In a study conducted in the United States, it was found that compared with non-practitioners, lifetime yoga practitioners were more likely female, younger, college-educated, higher earners, and of better health status [34].

Understanding of factors affecting people to practicing yoga are important to create an environment that makes it more likely that a greater number of people will practice yoga. An interesting finding of this study is that education level is negatively associated with the likelihood of practicing yoga whereas respondents with any of the close relatives that had attended health education were found to be more likely to practice yoga. Moreover, our results indicate that individuals those attended yoga-related trainings were more likely to practice a greater number of yoga poses. This indicates the relevance of incorporating yoga-related content in the formal education system. Our findings show the positive association between membership in social groups such as youth clubs, mothers' groups and cooperatives; and the likelihood of practicing yoga. However, about only one-third of the respondents were associated with such organizations. This indicates the importance of social groups in motivating people to practice healthy lifestyles.

5. Conclusion

Most of the respondents perceived that yoga has brought beneficial impact in their health and has improved their quality of life implying the need of motivating more people to incorporate yoga into their daily routine. This can be done by organizing yoga-related trainings, including yoga content in the formal education system, and by disseminating yoga benefits via social organizations such as youth clubs and mother groups. However, we see a need for future studies to examine the effectiveness of different types of training programs and social groups.

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None.

Conflict of interest

None.

Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.jaim.2021.01.007.

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