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ORIGINAL ARTICLE

THE EFFECT OF YOGA ON STRESS, ANXIETY AND DEPRESSION AMONG TURKISH ADULTS: A PRELIMINARY STUDY

Abstract

This study investigated the psychological effects of yoga on adult's mood such as stress, anxiety and depression. Depression, Anxiety and Stress Scale (DASS) with 42 items (Lovibond and Lovibond, 1995) was used to examine participants' psychological ailment prior to two weeks of yoga exercise and after the exercise. This scale was administered to 95 subjects in Middle East Technical University in Ankara/Turkey. For data analysis, SPSS version 21 and a paired sample T-test were used. The results indicated that there was a significant difference between stress, anxiety and depression scores before and after two weeks of yoga exercise. It might be concluded that yoga has positive effects on individual's psychological ailment and it may decrease the stress, anxiety and depression disorders.

Keywords: Yoga, stress, anxiety, depression

INTRODUCTION

In recent years, many investigations have indicated that the basic reason of many health problems such as depression, anxiety and even hypertension may be related to stress (Byrne and Espnes, 2008; Devereux et al., 1983; Pickering, 2001). Unfortunately, most of the people who suffer from these psychological ailments neglected to get appropriate treatment because of lack of information about identifying the signs of these kinds of psychological ailments. Acuna and Bolis (2005) have indicated that family has an important role in helping the family members suffering psychological problems, but their concern of being disgraced by public prevents them to act properly on the right time, especially at the early stages. Sometimes, the people with psychological problems require a good medication treat which might have side effects, so most of the people prefer to use alternative medication. Nowadays body-mind strategies such as Yoga, Tai chi and Qigong have become popular. These exercises include low to moderate exercise with breathing and focusing. Although many people have become aware of the positive effect of these exercise on body and mind, the number of investigations have shown that limited research is available for yoga exercises and researchers mostly focus on the effects of aerobic exercises (Daley, 2002).

Thousands of years ago, yoga originated in India and many people in all over the world practice it for reaching health not only physically but also spirituality (Birdee et al, 2009). Yoga is derived from Sanskrit word “Yug” meaning “to yoke” and it has been defined as “to join or unite with the divine or supreme self”. There are four branches of yoga with separate goals and focusing point: Raja yoga, Bhakti yoga, Karma yoga and Jnana yoga. Firstly, being focus on self-control is form the Raja yoga. Secondly, being concern about emotional devotion is identified as Bhakti yoga. Karma, the third type of yoga, focuses on individual’s actions and the effects of these actions on individual’ life. Lastly, in Jnana yoga, the individual tries to focus on scholarship. Overall, the target of all types is raising consciousness and moving beyond it and also overcoming the unhealthy habits not only on mental dimension but also on physical dimension. An investigation from U.S. by Herrick and Ainswoth (2000) indicated that hatha yoga (as a part of Raja Yoga) is the most popular yoga type among various types of yoga. Most types of yoga include eight parts which were invented by Patanjeli almost 1800 years ago. These parts are Yama, Nyama (which are related to ethical observation), Asana (postures), Pranayama (which is related to controlling the breathing), Pratyahara (which is related to sense of drawling), Dharna (which means

concentration), Dhyana (which means meditation) and Samadhi (which means high level of concentration) (Iyengar, 1979; Javanbakht, Hejazi and Ghasemi, 2009).

An individual practicing yoga may discover himself/herself as a part of the universe which pervades all things. Besides all the spiritual goals, yoga postures are used as a physical therapy for relief from stress and improving body posture (Granath, Ingvarsson, Thiele, and Lundberg, 2006; Javanbakht, et al., 2009). It is known that during each activity the glucose breakdown and releases adenosine tri-phosphate as energy for muscles and cardiovascular system (Thayer, 2001). In addition, respiration increases as the heart rate and blood pressure rise and it causes the adrenaline and cortisol hormones to release, which is important for concentration. Therefore, the tension decreases during this process. This decline lasts more in moderate exercise than it does in the vigorous exercise. Researchers have indicated that the heart functions will improve if a person regularly participates in a moderate exercises (Durham, 2005). For this reason, participating in a moderate level of physical activity three to five times per week (almost one hour) has been highly recommended for individuals (Shephard, 1997). Moderate exercises can help people improve good body-mind coherence more than vigorous exercise do (Berger and Owen, 1992). The movements with a low level intensity might be more influential in increasing the body-mind coherence than the aerobic exercises might be (Netz and Lidor, 2003).

Yoga, as a moderate level of physical activity, is a kind of alternative medical therapy which is recommended for many people who suffer from different kinds of diseases. It has been reported that practicing yoga has been suggested for 6.1% of the United States population and almost half of them believe that yoga therapy is beneficial and helpful for them (Macy, 2013). Doing yoga regularly might increase cortisol levels, especially with relaxation techniques (Cruess, et al., 2000; Ironson et al., 2000). Hatha yoga has become popular around the world, especially Asana (physical postures) which is called “yoga” colloquially. Although there are various styles of yoga, the type of intervention used in this study is all types of yoga which is not meditation-based. Like other activities, yoga is suggested for promoting cardiovascular systems, muscular endurance and also for health of metabolic and immune system. Yoga postures can encompass all types of movements in joints and limbs such as: flexion and extension, abduction and adduction, hypertension and rotation. Nonetheless, it has been claimed that in yoga, being focused during performing each pose makes it possible to increase flexibility, balance and also strength (Birdee et al, 2009). It has

been expected that doing yoga might help individuals enhance good body-mind coherence. It can have a positive effect on stress and anxiety disorders.

Because of these benefits of yoga, a variety of investigations exist for evaluating the effect of yoga on decreasing stress, anxiety and depression in different countries (Gupta, Khera, Vempati, Sharma and Bijlani, 2006; Javanbakht et al., 2009; Smith, Hancock, Blak-Mortimer and Echhart, 2007). In Turkey, the effects of yoga on health have also been investigated. Overall, these studies have concluded that yoga has a positive effect on different kinds of diseases such as: mental health and well-being (Taşpınar, Aslan and Ağbuğa, 2014), renal disease at final phase, hemodialysis (Yurtkuran, Yurtkuran, and Dilek, 2007) and cancer (Ülger, and Yağlı, 2010). However, there was lack of information about the effects of yoga on relief from stress among the Turkish adults. Based on that, this study investigated the psychological effects of yoga on adults' mood such as stress, anxiety and depression.

METHOD

Research Group

This investigation was conducted in Middle East Technical University (METU). METU sport center offers 9 yoga classes with different styles of yoga, not only for students and academicians but also for people who works in METU. Yoga classes took place twice in a week for 50 minutes. The target population of this study was all the participants whose ages differ from 18 to 62 in yoga classes at METU ($M=33.45$, $SD=10.20$). Nine yoga classes included 290 participants and 5 yoga instructors. For this study, only 95 people (89=Female, 6=Male) were participated voluntarily.

Data Collection Instrument

The participants answered the Depression, Anxiety and Stress Scale (DASS-42) after their yoga class and this process lasted for three to five minutes. DASS-42 was developed by Lovibond and Lovibond (1998). This instrument has been reported as a valid and reliable self-report instrument to use in groups and individuals to assess Depression, Anxiety and Stress (Lovibond and Lovibond, 1998). There are two forms of questionnaire: the questionnaire including 21 items (the short form) or the questionnaire with 42 items (the long form). For this study, the long version with 42 items including 3 factors (depression, anxiety and stress) was used. The questions are related to depression, anxiety and stress with 4 point Likert scale

in which the subjects are expected to rate the items from 0 (did not apply me at all) and 3 (applied me very much). It has been reported that alpha values for all dimensions of this scale are 0.81 for depression, 0.73 for anxiety and 0.81 for stress (Crawford and Henry, 2003; Lovibond and Lovibond, 2002). In addition, reliability for all subscales were as follows: .90 for stress, .84 for anxiety and .91 for depression scale. For assessing the depression, the items are related to hopelessness, lack of feeling of life and satisfaction (e.g., I found myself getting upset by quite things). In anxiety scale items try to assess the skeletal muscle influence, situational anxiety, experience of anxiety such as shaky, panicky and breathing difficulties (e.g., I was aware of dryness of my mouth). The items in stress scale are related to the sensitivity, nervy, jumpy, being easily upset and unable to relax (e.g., I couldn't seem to experience any positive feeling at all). Bilgel and Bayram translated DASS into Turkish language in 2010. Examination of reliability and validity has indicated that this instrument can be effective for assessing the university students' emotions during the previous week (Akın, Abacı, and Çetin, 2007).

Data Collection

This study was approved by METU Human Subjects Ethics Committee (HSEC) in April 2014. DASS-42 questionnaire was utilized for the participants of study at pre-test and post-test. Demographic information of the participants such as age, gender, job and types of activity during a week was also obtained during the study. The main researcher explained the purpose of the study to the participants. In addition, code numbers were given for the questionnaires instead of using names to keep the participants' information secretly. The data were only used for the purpose of this study and all data were secured. Figure 1 shows the general procedures of the study.

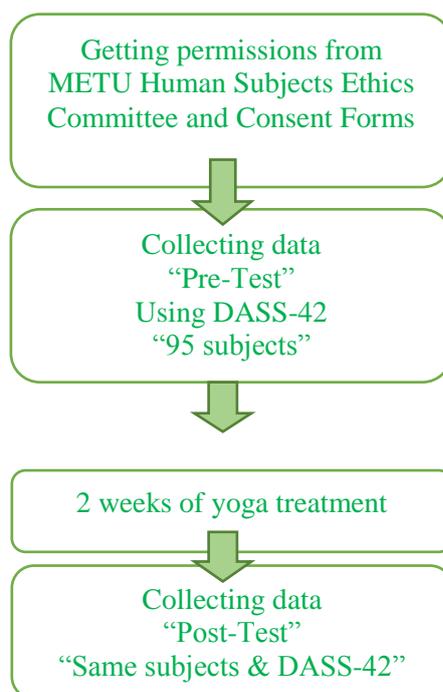


Figure 1: Flow chart for procedures of the study

Data Analysis

Statistical Package for Social Sciences (SPSS) program version 21 was used for the data analysis. Descriptive statistics were used to examine the gender, age and type of activity among the participants. In addition, repeated measures t-test was used to determine the effect of yoga on stress and anxiety. For the data analysis, 95 participants' questionnaires were used. Fourteen participants did not complete the questionnaires at the posttest.

For this study, two weeks of yoga program was independent variable, stress and anxiety were dependent variables. The null hypothesis stated that yoga has no significant effect on stress and anxiety. The alternative hypothesis stated that yoga has a significant effect on stress and anxiety. Therefore, the aim of this analysis was to find out whether there was any improvement in individuals' mood based on the scores of DASS-42 after attending the yoga exercise program.

RESULTS

The results indicated that the age range of the study participants were 44 ± 1 years. Occupation of the participants were listed as academicians ($n=41$), students ($n=28$), administrator ($n=17$), guest ($n=8$) and graduates ($n=1$). It was also found that 72.6% of participants just participate in yoga class and 27.4% of them participated in other programs

such as Aerobic, Pilates, Step, Zumba and walking besides yoga at METU. A paired-samples t-test was conducted to compare the scores of stress, anxiety and depression before and after 2 weeks yoga treatment.

Comparing the mean differences for stress in pre-test ($M=15.95$, $SD=7.06$) and post-test ($M=11.32$, $SD=6.47$) indicated that there was a significant difference between stress score before and after yoga treatment $t(94)=8.73$, $p<.05$ (see Table 1 and Table 2).

Table 1: Paired samples statistics for stress, anxiety and depression

	Groups		N	Mean	Std. Deviation	Std. Error Mean
Paired 1	Pre-test	S	95	15.95	7.06	.72
	Post-test	S	95	11.32	6.47	.66
Paired 2	Pre-test	A	95	11.21	6.66	.68
	Post-test	A	95	9.19	5.73	.59
Paired 3	Pre-test	D	95	11.83	8.37	.86
	Post-test	D	95	9.27	6.03	.62

S= stress, A= anxiety, D= depression.

Table 2: Paired sample correlations for stress, anxiety, and depression

	N	Correlation	Sig.
Paired 1(Pre-test S &Post-test S)	95	.71	.00*
Paired 2 (Pre-test A&Post-test A)	95	.77	.00*
Paired 3(Pre-test D&Post-test D)	95	.81	.00*

S=stress, A= anxiety, D=depression

* $P<.05$

With comparing the anxiety scores in pre-test ($M=11.21$, $SD=6.66$) and post-test ($M=9.19$, $SD=5.73$) a significant differences was found $t(94)=4.57$, $p<.05$. In addition comparing the pre-test ($M=11.83$, $SD=8.366$) and post-test for depression ($M=0.27$, $SD=6.03$) presented a significant differences $t(94)=5.05$, $p<.05$ (see Table 3).

Table 3: Paired samples test for pretest and posttest differences

	Paired differences				T	Df	Sig. (2-tailed)	
	Mean	Std. Deviation	Std. Error Mean	95 % Confidence Interval of the Differences				
				Lower				Upper
Paired 1	4.63	5.17	.53	3.58	5.69	8.73	94	.00*
Paired 2	2.02	4.31	.44	1.14	2.90	4.57	94	.00*
Paired 3	2.56	4.94	.51	1.55	3.56	5.05	94	.00*

“Paired 1= Pre-test S & Post-test S, Paired 2= Pre-test A & Post-test A, Paired 3=Pre-test D & Post-test D”

S=stress, A= anxiety, D=depression

* $p<.05$

DISCUSSION

The effect of yoga on stress, anxiety and depression was investigated for this study. Two weeks of yoga treatment was found effective to decrease adults' stress, anxiety and depression. Similar findings were found in a variety of investigations that try to assess the effect of yoga on stress and anxiety. Especially, the majority of the studies represented significant decline in stress and anxiety (Khalsa, Shorter, and Cope, 2009; Satyapriya, Nagendra, Nagarathna and Padmalatha, 2009; Smith et al., 2007; Waelde, Thompson, and Gallagher, 2004). It should be also mentioned that these studies have different types of research design and have used different types of scale.

Berger and Owen (1988) compared the yoga exercise to three different sports (swimming, fencing and body conditioning) to examine the effectiveness of yoga on anxiety. The results indicated that only yoga exercise had positive effects on anxiety level of individuals. A different investigation found that anxiety level of male students decreased as a result of yoga participation (Ray et al, 2001). Sahsi, Mohan and Kacker (1989) compared the effects of yoga exercise participation and using Diasepam on anxiety level of individuals. After a three months treatment, Sahsi and his colleagues found that yoga group had lower anxiety level than the group in which the Diasepam was used. One possible reason might be that yoga is similar to massage because it can stimulate the pressure receptors which causes decreasing the stress of individuals (Field et al., 2012).

Similar results have been also reported in Turkish studies. Taşpınar and his colleagues (2014) found the positive effects of Hatha yoga on mental health and well-being for fifty one sedentary adults. The researchers used three different questionnaires (Visual Analog Scale, Rosenberg Self-esteem Scale, and Body Cathexis Scale). Their findings showed a significant improvement in fatigue, self-esteem and quality of life and also significant decline in depression. In another investigation, researchers found out positive effects of yoga on the quality of life of cancer patients by using the Nottingham Health Profile (NHP) (Ülger and Yağlı, 2010). It was concluded in the study that yoga might be helpful for cancer patients to relax and decrease their stress and increase their quality of life. A clinical investigation by Yurtkuran et al. (2007) examined the effects of a 12 week yoga-based exercise treatment for hemodialysis patients (n=19). It was reported that yoga had a positive effect on patients with renal disease at final stage. Although there are several studies conducting to show the positive effects of yoga on health, limited studies are available to investigate the effects of yoga on

stress, anxiety and depression among the Turkish adults, especially using DASS-42 questionnaire. For this reason, this study might be a preliminary study to examine the effects of yoga on psychological ailment of adults.

It should be also mentioned that this study had some limitations. One of them was related to the process of collecting data. There was no control group and the period of yoga treatment was so short. For this reason, the findings of the results should be carefully interpreted. Future studies should focus on the duration of the yoga treatment. Long yoga exercise programs lasting one month or three months should be organized for healthy adults. Furthermore, control groups should be included for the future studies in order to examine the treatment effect on adults. Another limitation of the study is that we do not know the lifestyle of the participants. Some external factors may help reduce adults' stress, anxiety or depression levels. Future studies should focus on external factors that may affect the adults' psychological factors.

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