

ผลของโปรแกรมการฝึกโยคะต่อความรู้สึกอยากแอลกอฮอล์และความเครียดของผู้ติดแอลกอฮอล์ที่ รับการรักษาแบบผู้ป่วยในระยะเวลาบำบัดด้วยยา: การทดลองแบบสุ่มและมีกลุ่มเปรียบเทียบ Effects of Yoga Training Program on Alcohol Craving and Stress among Persons with Alcohol Dependence Receiving Inpatient Detoxification Treatment: A Randomized Controlled Trial

นิพนธ์ต้นฉบับ

Original Article

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บทคัดย่อ

วัตถุประสงค์: เพื่อศึกษาผลของโปรแกรมฝึกโยคะต่อ 1) คะแนนความรู้สึกอยากแอลกอฮอล์และความเครียดก่อนและหลังการทดลอง ทั้งกลุ่มที่ฝึกโยคะและกลุ่มที่รักษาด้วยยาอย่างเดียว 2) ความแตกต่างของคะแนนความรู้สึกอยากแอลกอฮอล์และคะแนนความเครียดก่อนและหลังการทดลองระหว่างกลุ่มที่ฝึกโยคะกับกลุ่มที่รักษาด้วยยาอย่างเดียว **วิธีการศึกษา:** การวิจัยเชิงทดลองแบบสุ่มและมีกลุ่มควบคุม มีผู้ติดแอลกอฮอล์ที่รับการรักษาแบบผู้ป่วยในระยะเวลาบำบัดด้วยยาที่สถาบันบำบัดและฟื้นฟูผู้ติดยาเสพติดแห่งชาติบรมราชชนนีซึ่งมีคุณสมบัติตามเกณฑ์และจับคู่ด้วยคะแนนความรู้สึกอยากแอลกอฮอล์และจำนวนครั้งที่เข้ารับการรักษาด้วยยาเข้ากลุ่มทดลองและกลุ่มควบคุมกลุ่มละ 30 ราย เครื่องมือที่ใช้ในการวิจัยคือ 1) โปรแกรมฝึกโยคะ 10 สัปดาห์ 2) แบบประเมินความรู้สึกอยากแอลกอฮอล์ 3) แบบประเมินความเครียด 4) แบบสอบถามข้อมูลทั่วไป ทดสอบความแตกต่างของค่าเฉลี่ยด้วย paired t test และ independent t test **ผลการศึกษา:** คะแนนเฉลี่ยความรู้สึกอยากแอลกอฮอล์ และคะแนนความเครียดก่อนและหลังการทดลองในกลุ่มทดลองลดลงอย่างมีนัยสำคัญทางสถิติ (P -value < 0.05 ทั้งคู่) ในขณะที่ไม่มีนัยสำคัญในกลุ่มควบคุม ผลต่างคะแนนเฉลี่ยของความรู้สึกอยากแอลกอฮอล์และความเครียดในกลุ่มทดลองล้วนต่างจากกลุ่มควบคุมอย่างมีนัยสำคัญทางสถิติ (P -value < 0.05 ทั้งคู่) **สรุป:** การฝึกโยคะทำให้คะแนนความรู้สึกอยากแอลกอฮอล์และความเครียดลดลงเมื่อเปรียบเทียบกับการรักษาด้วยยาอย่างเดียว ควรนำโปรแกรมโยคะนี้ไปฝึกในกลุ่มคนใช้ติดแอลกอฮอล์ในระยะที่รักษาด้วยยาต่อไป

คำสำคัญ: โปรแกรมการฝึกโยคะ, ความรู้สึกอยากแอลกอฮอล์, ความเครียด, ผู้ติดแอลกอฮอล์

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Abstract

Objective: To compare 1) scores of alcohol craving and stress before and after yoga program in patients receiving yoga (test group) and those receiving medications only (control group), and 2) changes in scores of alcohol craving and stress between the test and control groups. **Methods:** In this randomized controlled trial, participants were alcohol addicts hospitalized for detoxification treatment in medical wards of Princess Mother National Institute on Drug Abuse Treatment, Thailand. They met the inclusion criteria and were match-paired randomized on alcohol craving score and number of previous addiction therapy to the test and control groups (30 each). Research instruments consisted of 1) 10-week yoga training program, 2) Alcohol Craving Questionnaire-Revised (ACQ-R), 3) Thai version of 10 - Item Perceived Stress Scale [T-PSS-10], and 4) demographics data collection form. Scores were compared using paired t test and independent test. **Results:** Scores of alcohol craving and stress in the test group before and after the intervention were significantly different (P -value < 0.05, for both) while no significant differences were not found in the control group. Changes in scores of alcohol craving and stress between the test and control groups were significant (P -value < 0.05, for both). **Conclusion:** Yoga practice alleviated alcohol craving and stress. It should be used in regular alcohol addicts hospitalized for detoxification with medications.

Keywords: yoga training program, alcohol craving, stress, persons with alcohol dependence

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Introduction

Alcohol is a substance widely used because of misunderstanding such as drinking to build identity, drinking for relaxation or ease of sleeping. Long-term use of alcohol leads to addiction. For those who are in remission after therapy and/or psychotherapy, some might face relapse. Alcohol drinking has been increasing in intensity and become a major public health problem affecting physical and mental health, and causing alcoholic psychosis and alcohol

dependence. It negatively affects economic at all levels either family, societal or national levels.

Despite the advancement of alcohol addiction therapy, as high as 44.84% of alcohol addicts relapsed which caused poorer quality of life, poorer family relationship, more stress, more societal burden, and more criminal tendencies and violence.¹ In addition, expenditure for healthcare increased and national income decreased.¹ Relapse within the first 6 to

12 months after remission is prevalent since the brain is still sensitive to alcohol.

Alcohol relapse is manifested labile moods such as agitation, stress, and lack of self-care. As high as 44.84% of the addicts usually need to be in rehabilitation setting.¹ Based on the annual report of the Princess Mother National Institute on Drug Abuse Treatment which is a specialized hospital for substance addiction under the Ministry of Public Health of Thailand, there were 851 and 562 alcoholic addicts undergoing therapy in 2020 and 2021, respectively.¹ The goal of alcohol addiction therapy is permanent abstinence from alcohol. However, alcohol craving becomes more intense after a short duration of alcohol abstinence.

Previous studies suggest that craving for alcohol and substances could be explained by various concepts. Based on the conditioning-based model², craving is an automatic response to stimuli subconsciously. For motivational model, craving is a function of motivation and decision making. Psychobiological model states that craving arises as a change in neurotransmitters level and the activation of reward pathway.³ Cognitive model believes that craving of alcohol is a result of cognitive process of internal and external activating stimuli which leads to beliefs activated, autonomic thought, and alcohol craving. The craving of alcohol during medication therapy is stimulated by discomfort from alcohol withdrawal such as palpitation, shivering, sweating, headache, anxiety, agitation, stress, and depression.⁴ Alcohol craving causes stress and suffering.

It has been a continuous attempt to apply cognitive-based concept based on Buddhism to battle alcohol craving such as meditation, mindfulness training, anapanasati vipassana meditation, praying, and walking meditation. These activities allow a brief calmness and halt negative thinking. However, the mind wanders and calmness vanishes, hence the craving returns which leads to relapse.

The study of Petker and colleagues examined benefits of yoga in combination with conventional treatment to treat women with substance addiction.⁵ They found that after the experiment, participants had less craving, more self-efficacy, less psychological symptoms, less quick temper, and more mindfulness significantly (P -value < 0.001). With such evidence, this study aimed to use yoga for alcohol addiction. Yoga is a combination of physical and mental awareness to achieve mindfulness which could strengthen potential of

physical, psychological and spiritual health.⁶ Yoga could be yoga asana non-movement and yoga asana movement.

In Thailand, there has been no studies on yoga for alcohol craving. However, a study of Mats and colleagues in Sweden used yoga with conventional treatment for alcohol addiction in the out-patient department.⁷ With the home practice of yoga for 10 weeks, these alcohol addicts had less alcohol dependence, less frequency of alcohol drinking significantly. With the premise of arising mindfulness with yoga practice, it allows for a better control of mind; hence a better control of alcohol consumption. It has been widely known that conventional medication treatment is not effective in fully controlling alcohol craving. Alcohol addicts undergoing drug treatment suffer from stress from the remnant craving. We expected to have yoga as an alternative or complementary treatment modality for alcohol addiction. This study specifically aimed to 1) compare scores of alcohol craving and stress before and after the yoga intervention in alcohol addicts receiving yoga intervention (test group) and those receiving conventional medication treatment only (control group), and 2) determine differences of score changes of alcohol craving and stress from before to after the intervention between the two groups. Accordingly, it was hypothesized that, in the yoga intervention group, scores of alcohol craving and stress after the intervention were lower than those before the intervention. Before-and-after changes in scores of alcohol craving and stress in the test group were larger than those in the control group.

Methods

In this randomized controlled study (registered number: TCTR20230426006), it was single-blind of which evaluator did not know groups of participants (test or control groups). Since patients hospitalized in the two medical wards were all men, all participants were men. They were match-paired randomized on alcohol craving score and number of previous addiction therapy to the test and control groups (30 each).

The evaluation was done before and after the intervention in patients receiving alcohol addiction treatment in two medical wards of the Princess Mother National Institute on Drug Abuse Treatment in Pathumthani province, Thailand. Participants in the test group received conventional medication treatment for alcohol addiction with yoga practice while those in the control group received only the medication detoxification treatment.

Sample size was estimated based on the mean score with standard deviation of alcohol craving from the study of Kongjak and Penpaktr.⁸ The two-sample parallel design with superiority test of a type I error of 5% and power of 80% test was used.⁹ With mean scores of craving in the test control group and test group of 15.0 and 8.5 points, respectively, and a pooled standard deviation of 7.3, a sample size of 23 participants per group was needed. To compensate for an attrition rate of 10%, a total of 30 participants per group were required.¹⁰

To be eligible, individuals had to be diagnosed with alcohol addicts based on ICD-10¹¹, 25 – 45 years old, have score of alcohol craving at the lowest to high level (30 – 210 points)⁸, have no severe alcohol withdrawal symptoms with Clinical Institute Withdrawal Assessment for Alcohol revised (CIWA-Ar) score < 8, be able to read, write and communicate with Thai language, had no alcohol withdrawal symptoms at least 14 days before the study, and be willing to participate in the study. Those who had severe complications either physical or psychological such as seizure, convulsion, hallucination, severe depression, self-injury, or offensive behavior, were excluded.

Research instruments

Instruments included evaluation tools and the yoga intervention. For evaluation tool, it consisted of a questionnaire of 3 parts. The first part collected demographic and clinical characteristics. The second part was Alcohol Craving Questionnaire Revised: ACQ-R. The third part was Thai version of 10-Item Perceived Stress Scale [T-PSS-10]. The second and third parts were used with permission.

The first part collected information of gender, age, marital status, occupation, annual income, ethnicity, type and amount of alcohol consumed daily, number of previous alcohol addiction therapy, experience of yoga practice, and alcohol addiction history.

The second part was the Alcohol Craving Questionnaire Revised: ACQ-R) developed by Raabe and colleagues and translated into Thai language by Kongjak and Penpaktr.⁸ This self-reported questionnaire consists of 30 questions with a response of a 7-point rating scale (1 – 7 points). With a possible total score of 30 – 210 points, alcohol craving was categorized as low, moderate and high (30 – 90, 91 – 150, and 151 – 210 points, respectively). This questionnaire was back-translated by two experts, had a good content validity as tested by five experts in mental health and psychiatrics, had

high internal consistency reliability with a Cronbach's alpha coefficient of 0.96.⁸

The third part was Thai version of 10-Item Perceived Stress Scale [T-PSS-10]. It was developed by Cohen et al¹² and translated into Thai language by Wongpakaran and Wongpakaran.¹³ Stress in the past month was measured in both health status and function. The 10 questions consisted of 4 items with positive statements and 6 items with negative statements. Response was a 5-point Likert-type rating scale ranging 0-never or rarely, 1-occasionally, 2-sometimes, 3-often, and 4-frequently for positive statements and in the opposite direction for negative statements. Stress level was categorized as low, moderate, and high (0 – 13, 14 – 26, and 27 – 40 points, respectively) using the concept of range divided by number of levels. The scale had a high internal consistency reliability (Cronbach's alpha coefficient of 0.95).¹⁴

The intervention of elementary yoga asana

Thirty participants in the test group attended 60-minute sessions of elementary yoga asana practice, 3 times weekly for 4 weeks. The sessions were held in the morning (9 – 10 AM) on Monday, Wednesday, and Friday for a total of 13 sessions at the Princess Mother National Institute on Drug Abuse Treatment. The researcher developed the yoga training based on the yoga asana of India. The training program was approved by experts in ethics for human study. Activities in the yoga asana program were to reduce stress and alcohol craving while they were hospitalized. The researcher as a trainer for the participants and healthcare providers.

Yoga asana aims for self-improvement, mindfulness, self-awareness, and present body movement. Yoga asana uses simple movement so people of all ages can perform. Yoga asana consists of all postures of lying down, sitting, and standing, and basic breathing control. Trainees can feel relaxed both physically and mentally and focused. Asana postures are independent from each other in terms of order. These basic asana postures need no order. These postures were as follows.

First, the lying down on the back consisted of two postures. The first posture was Savasana or corpse-like pose which took 8 minutes. The lying down on the back is the resting posture which helps the participant to relax both physically and mentally, reduce stress, monitor one's inner feeling, be familiar with the posture, and let go of fear of death. The second posture was Ardha Halasana or half-body plowing

pose which takes about 2 minutes. This pose helps strengthen abdominal muscles and hip muscles, move abdominal internal organs, enhance digestive and excretory functions, and improve blood circulation in legs.

Second, the lying down posture had 3 poses. First, the Makarasana or crocodile pose took 2 minutes. This resting pose helped the participants relax and massage and strengthen abdominal wall, and improve digestive system. The second pose was Bhujangasana or snake pose which took 2 minutes. It helps exercise the upper back muscles, increase flexibility of the backbone, massage abdominal cavity, decrease gastric acid, and improve excretory system. The third pose was Salabhasana or grasshopper pose which took 2 minutes. It helps exercise lower back muscles, massage abdominal cavity, and stimulate excretory system.

Third, the sitting posture had 5 poses. The first pose was Janu Sirsasana or head-to-knee pose which took 2 minutes. It helps stretch tendon and muscles of the back, legs, and neck, and massage abdominal cavity. The second pose was Pascimatanasana or back stretching which took 2 minutes. It helps stretching all organs close to the back, massage abdominal organs, and offer holistic stretch and relaxation for the whole body. It is believed to bring calmness and mindfulness. The third pose was Vajrasana or diamond pose which took 2 minutes. It helps enhance digestive function and strengthen organs around bones and pelvis. It offers calmness and facilitate sitting meditation. The fourth pose was Yoga Mudra or yoga-symbol finger pose which took 2 minutes. It helps massage abdominal organs, improve blood circulation to the head so feeling alert, and strengthen blood vessel in the upper legs. The fifth pose was Vakrasana or backbone twisting which took 2 minutes. It helps improve backbone flexibility, realign the backbone, stimulate nervous system along the backbone, and exercise abdominal organs, neck and eyesight.

Fourth, the standing posture had 1 pose, Chakrasana or wheel pose, which took 2 minutes. It helps exercise backbone to the side, stretch flank muscles, massage abdominal organs, and improve blood circulation in the arms.

Fifth, the breathing control (pranayama) with W-sitting posture took 10 minutes. It is the last step of elementary yoga asana which is breathing control. The participants were instructed to breathe with alternating nostril starting with holding the right nostril closed with a finger and breathe through the left one. The participants completed one breathing

cycle by breathing with the opposite nostril. Participants were instructed to repeat at least 10 breathing cycles. In each breathing, ratio of breathing in and out had to be balanced, e.g., for 5 seconds of breathing in, the person had to keep breathing out for 5 seconds. The pose also included Ujjayi Pranayama which is slow, long, even exhaling, followed by holding the breath for 2 – 3 seconds, then inhaling slowly. This breathing causes a loud sound in the throat. It helps improve efficiency of breathing and blood circulation, relax and bring calmness.

Participants in the **control group** were treated with conventional medication treatment for alcohol addiction. They were offered yoga training after the end of the yoga intervention and post-test evaluation.

Data collection procedure

Before and after the intervention, all participants were asked to complete the questionnaire.

Participants ethical protection

The study was approved by the Ethics Committee for Human Study of Srinakharinwirot University (approval number: SWUEC/E-074/2564; approval date: June 14, 2021), of the Princess Mother National Institute on Drug Abuse Treatment (approval number: 016-2565). The study was based on voluntary basis of which participants could refuse or withdraw from the study at any time with no reasons needed and no negative consequences on the care they received.

Data analysis

Descriptive statistics including mean with standard deviation and frequency with percentage were used to summarize demographic and clinical characteristics of the participants. Differences between the two groups were tested using chi-square test or Fisher's exact test, as appropriate, for categorical variables, and independent t test or Mann-Witney U test, as appropriate, for continuous variables. In the test group, scores of alcohol craving and stress before and after the intervention were compared using paired t test or Wilcoxon's signed rank test, as appropriate. For the before-and-after intervention differences of scores of alcohol craving and stress of the two groups, they were tested using independent t test or Mann-Witney U test, as appropriate. Statistical significance was set at a type I error of 5% (i.e., P-

value < 0.05). All statistical analyses were performed using software program SPSS version 20.

Results

Of the 60 participants, all of them were men. The majority in the test and control groups were in their 36 – 45 years of age (48.82%) and 25 – 35 years of age (51.18%), respectively, were married (50.22%) and single (40.76%), had primary school education (58.22% and 47.12%) followed by high school education (41.78% and 52.88%), and were general labor (83.39% and 83.39%). The majority had been drinking alcohol for 11 – 20 years (30.43% and 35.55%) followed by 6 – 10 years (69.57% and 64.45%), had never been treated with alcohol addiction (40.83% and 42.17%) followed by once (59.17% and 57.83%), had no measures to deal with craving (95.22% and 95.45%) with only 4.78% and 4.55%, respectively, who did so, had no experience of yoga practice (100% and 100%), and had experience in mindfulness training (43.47% and 40.39%).

In the **test group**, mean score of alcohol craving before the intervention (137.37 ± 4.78 points) decreased significantly to 83.36 ± 4.55 points after the intervention (P-value < 0.05). Mean score of stress before the intervention (28.96 ± 3.48 points) also decreased significantly to 14.43 ± 3.48 points after the intervention (P-value < 0.05)

Table 1 Scores of alcohol craving and stress (N = 60).

| Study outcomes | Level | Mean \pm SD | Before and after difference | P-value [§] |
|------------------------|----------|-------------------|-----------------------------|----------------------|
| Alcohol craving | | | | |
| Test group | | | | |
| Before | Moderate | 137.37 ± 4.78 | 54.01 ± 4.89 | < 0.05 |
| After | Low | 83.36 ± 4.55 | | |
| Paired t test | | < 0.001 | | |
| Control group | | | | |
| Before | Moderate | 137.46 ± 4.62 | 8.36 ± 4.58 | 0.080 |
| After | Moderate | 129.10 ± 4.72 | | |
| Paired t test | | 0.080 | | |
| Stress | | | | |
| Test group | | | | |
| Before | High | 28.96 ± 3.48 | 14.53 ± 3.55 | < 0.05 |
| After | Moderate | 14.43 ± 3.30 | | |
| Paired t test | | < 0.001 | | |
| Control group | | | | |
| Before | High | 29.56 ± 3.58 | 1.99 ± 3.38 | 0.062 |
| After | High | 27.57 ± 3.49 | | |
| Paired t test | | 0.062 | | |

[§] Independent t test.

Similarly, in the **control group**, mean score of alcohol craving before the intervention (137.46 ± 4.62 points) decreased significantly to 129.10 ± 4.72 points after the intervention (P-value < 0.05). Mean score of stress before the intervention (29.56 ± 3.58 points) also decreased significantly to 24.57 ± 3.49 points after the intervention (P-value < 0.05). It could be concluded that the extent of improvement in alcohol craving score and stress score in the control group was smaller than that in the test group (Table 1).

From before to after the intervention, the change in score of alcohol craving in the test group (54.01 ± 4.89 points) was larger than that in the control group (8.36 ± 4.58 points) with statistical significance (P-value < 0.05). The change in stress score in the test group (14.53 ± 3.55 points) was larger than that in the control group (1.99 ± 3.38 points) with statistical significance (P-value < 0.05) (Table 1).

Discussions and Conclusion

Scores of alcohol craving and stress in alcohol addicts in patients undergoing yoga intervention decreased significantly from before the intervention, while no significant decreases were found in the control group. The improved score of alcohol craving is consistent with the cognitive concept⁴ where yoga helps alcohol addicts realize and understand the craving feeling. Such craving and stress during medication treatment arise from stimuli they are facing. To reduce suffering from alcohol craving, one has to be able to manage stimuli both externally and internally successfully, and adjust the belief and automatic thinking to the proper direction.^{14,15} Our finding is consistent with the work of Mats and colleagues where yoga practice in combination with traditional treatment reduced frequency of alcohol intake significantly.⁷ It is also consistent with the study of Gaihre and colleagues where yoga practice reduced depression and anxiety than the exercise significantly.¹⁶ Yoga also reduced alcohol craving significantly in another study.¹⁷ Yoga practice helps individuals control their emotion and not to avoid problems.^{18,19} Yoga also helps obsessive thinking which normally leads to poor adjustment by promoting realization of the negative impact. These skills of acknowledging and controlling emotion are useful for alcohol addicts since they helps the addicts manage the experience they do not like and know how to manage with their alcohol craving.^{20,21} This means that alcohol addicts acknowledge their craving, and view such craving as

impersistent and will subside over time with no emotion allowed to judge the craving. This would lessen conflicts and craving. Addicts were also taught not to hold on to wrong belief about positive effects of alcohol. The addicts rightfully perceived the harm and danger of alcohol. Both ways of thinking helped reduce automatic thinking of alcohol and ultimately reduce alcohol craving.²²

The effects of improving (i.e., decreasing) alcohol craving and stress of yoga practice in addition to the conventional medication treatment was more than that of the conventional medication treatment alone (control group). This finding is consistent with the work of Bhagabati and colleagues where persons with alcohol dependence had frequency of alcohol intake reduced significantly after yoga practice.¹⁵ It is also consistent with the works of Petker and co-workers⁵, Wimberly and colleagues²³, and Gupta and colleagues.²⁴ Such benefit could be because yoga practice made the participants more focused and attentive to the practice. They attended the session on time and were mindful in walking. They showed appreciation toward yoga practice. Their cognitive function seemed to change to more positive thinking and be more motivated. These could lead to being mindful and ultimately having less alcohol craving and stress.¹⁷

This present study has certain limitations. The participants were instructed to practice a relatively large number of postures. This could be a memory burden for them. Pictures of all postures should be placed on the wall in the training room. Our findings could be useful for patient care. Psychiatric nurses could apply yoga training for their alcohol addict patients both hospitalized to be treated with medications and when rehabilitated as the out-patient patient. For future research, benefits of yoga for alcohol craving and stress should be tested with a longer duration, i.e., after discharged from hospital.

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