

Review article:

Impact of Spiritual Meditation on Drug Addiction Recovery and Wellbeing: A Systematic Review

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Abstract:

It is well recognized throughout the history that religiosity, spirituality and the meditation practice have significant effects to the physical and mental health. Hence, this paper interested to evaluate the effectiveness of spiritual meditation on drug addiction recovery and its effects on psychological and mental health aspects. Three main databases in medicinal and psychology field were screened to identify the eligible studies which are PubMed, Cochrane and Scopus by using Boolean expression. Fourteen papers were included in this review. Standardized mean differences were calculated based on the intergroup mean difference and standard deviation followed by Cochran's Q and I² determination for heterogeneity analysis. The mean differences were statistically pooled in the meta-analysis and presented as a forest plot. The risk of bias was high for each study and assessed using the Jadad scale. The meta-analysis showed significant differences in across studies for addiction related outcome (I²=27%, 95% CI: -1.703, -0.454), anxiety (I²=0%, 95% CI: -0.874, -0.634) and stress (I²=100%, 95% CI: -0.874, -0.634). In general, spiritual meditation may promote the addiction recovery as well as improve the psychological and mental health outcomes by reducing the depression, anxiety and stress symptoms. In conclusion, randomized control trial on spiritual meditation gave positive impact on the addiction behavior as well as mental health and clarifies its reliability on addiction therapy problems.

Keywords: Spiritual meditation, spirituality, meditation, systematic review.

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1. Introduction

It is well recognized throughout the history that religiosity, spirituality and the meditation practice have significant effects on the physical and mental health.¹ Whereas the meditation gains a significant momentum on literature yet, according to Koenig, only in the last decade spirituality is considered as the important impact in treatment and healing process of patients.² After decades of rapid increase, it appears that spiritual meditation gave positive impacts on depression, anxiety, stress, post-traumatic stress disorder (PTSD), cancer, schizophrenia, chronic pain, attention-deficit hyperactivity disorder (ADHD) and addiction.³⁻⁷ Some conceptual clarification around spiritual meditation may be remarkable. Spiritual meditation derived from terms spiritual and meditation. Spiritual is under term of spirituality.

The meaning of spirituality has no universal definition. Nevertheless, it can be defined as the sacred connections of self with universe or others may or may not include in the belief of Higher Power, God or Transcendent and its journey to identify the purpose of life, meaning of life, values, and moral along the specific practice, movement or ritual.⁸⁻⁹ In terms of meditation, it is a generic term that covering a wide range of movements in the variety of practices along with its specific purpose.¹⁰⁻¹¹ As a result, spiritual meditation can be defined as any particular movements or practices that have a sacred connection and meaning with self or universe or others. Mindfulness based meditation, mantra-based meditation, twelve steps practice, dhikr, solah, compassion therapy, psychotherapy program with spirituality elements or practice fallen under umbrella of spiritual

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meditation term.

The considerable amounts of systematic review on spiritual meditation and addiction were published in the last decade. In a systematic review of 105 literatures on religiosity and substance use by Chitwood, Weiss and Leukefeld has proved the positive association between religiosity/spirituality interventions can reduce the risk of substance used, even though the relationship between them is insufficient.¹² Then, Walton-Moss, Ray, and Woodruff, supports the evidence by reviewing 29 eligible studies on spirituality effects on addiction.¹³ This study proposed that spirituality may affect the abstinence, treatment retention, alcohol or drug use severity, and discharge status. Moreover, the following systematic review and meta-analysis by Gonçalves, Lucchetti, Menezes and Vallada postulated that spiritual intervention reduces stress alcoholism and depression.¹⁴ However, to date no systematic review on spiritual meditation on drug addiction has been carried out. Hence, this paper intends to evaluate the effectiveness of spiritual meditation on drug addiction recovery and its effects on psychological and mental health aspects. The proposed systematic review will answer the following questions:

1. What is the impact of spiritual meditation on the cessation of drug addiction?
2. What is the impact of spiritual meditation on the psychological and mental health outcomes among drug addiction patient?
3. What are the methodological characteristics of each study and its quality?

Considering the heterogeneity in result, the meta-analysis was performed if the studies were capable through the reported clinical outcomes.

2. Methodology

2.1 Eligibility criteria

This paper included the published randomized control trials studies examining the adult drug addiction population including methadone and buprenorphine participant from January 2015 to January 2019. Any types of relevance spiritual meditation were eligible if they reported the effects of spiritual meditation on addiction related, psychological and mental health outcomes. This study also included mindfulness, based meditation techniques, twelve steps interventions, motivation therapy, dhikr therapy and other therapies that can be categorized as spiritual meditation.

2.2 Search strategy

Three main databases in medicinal and psychology field were screened to identify the eligible studies

which are PubMed, Cochrane and Scopus by using Boolean expression. Electronic searches were specific to Title, Abstract and Keyword only. The search strategy highlighted all related terms for spiritual meditation in order to yield all relevant literature. The terms were as follows: (*spiritu** OR *religio** OR *faith* OR *Isla** OR *Christ** OR *Hindh** OR *buddha* OR *pray* OR *mosque* OR *church* OR *bible*) AND (*treatment* OR *therapy* OR *assistance* OR *meditation* OR *group* OR *mantra* OR *chanting* OR *incantation* OR *dua* OR *dhikr* OR *supplement*) AND (*substance abuse* OR *drug abuse* OR *heroin* OR *opiate* OR *cocaine* OR *psychedelics* OR *drug addiction* OR *marijuana* OR *psychoactive drugs* OR *illicit* OR *stimulant* OR *meth** OR *hallucinogen* OR *steroid* OR *polydrug*) AND (*clinical trial* OR *randomized controlled trial* OR *controlled clinical trial*).

2.3 Study selection

First, all eligible studies were imported, and the duplicate articles were identified and removed by using Mendeley. Later, one of the researchers examined the title and abstract of the studies to remove those against a mentioned eligibility criterion such reviews, off topic, and repeated versions in other databases. Second, both of the researches were screened the full text of selected studies. Each study reviewed extensively on intervention and randomization process.

2.4 Data items

Outcome extracted from each studies were: (1) participant with drug addiction problems; (2) sample size; (3) intervention protocols such as type of intervention, frequency and duration of therapies or interventions or meetings, number of follow up if present; (4) instruments and outcomes measures and; (5) results of each study. Addiction related such as abstinence, frequency symptoms, psychological effects, cognitive, attention, depression, anxiety and stress were further analyzed in the meta-analysis if the data are acceptable.

2.5 Evaluation of studies / Risk of bias individual studies

Risk of bias for individual studies (assessment on methodological quality of article) were rated by using Jadad score¹⁵⁻¹⁶ consists of pre and post study, randomized and nonrandomized control trial. Jaded score consists three parts which are randomization (2 sub score), blinding (2 sub score) and account on study (1 score). Therefore, 5 marks are the highest, suggestive the lowest risk of bias. The 3 considered fair and below 3 are poor

and above 3 considered good.

2.6 Evaluation data synthesis

The authors evaluated the data using Microsoft Excel 2010. Cohen's D was used to quantify the effect size (standard mean difference) for each possible outcome. The effect size of each outcome was calculated by using the differences of intergroup means and standard deviation between post treatment of spiritual meditation and controls groups. Quantified standard mean difference was considered small for 0.2, medium and large for 0.5 and 0.8 respectively.¹⁷⁻¹⁸ A positive value shown that intervention preferred the control group or treatment as usual, while a negative value stipulated that the intervention preferred to spiritual meditation group.¹⁹ P-values of less than 0.05 were accounted as statically significant. If the effect size cannot be evaluated, the studies were eliminated from meta-analysis. Regarding the meta-analysis, Cochrane's Q and I² were calculated based on the study of Neyeloff, Fuchs and Moreira.²⁰ Cochrane's Q was justified the heterogeneity among the studies by enumerating the weight sum of squared differences between individual study effects and the pooled effect across the studies with the weight used in the pooling method. Calculated Q was distributed as chi-square statistics with number of studies minus with 1 degree of freedom, (k-1) which is k is the total number of studies. Then, Q values were compared against a table of critical values to gain p-value. If the evaluated Q was lower than the table of critical value, it can be defined as the studies are similar or homogenous. Next, the formula for I² represent as percentage of the total variability in a set of effect size due to the true heterogeneity. I² was considered as statistical heterogeneity of meta-analysis. Negative values of I² defined to be zero which means the studies were similar whereas positive values, 25 percent (%), 50% and 75% shown the heterogeneity a low, moderate and high respectively.²¹⁻²² Random effects model was chosen due to the possible heterogeneity in studies, with 95% confidence interval for each measure. The forest plot was used to present the pooled effect size in the meta-analysis.

3. Results

3.1 Selection of studies

An overview of selection of articles was presented in the [Figure 1](#). 5951 articles were identified from three main databases. After removing the 215 duplications, 5736 articles were screened by their title and abstract. Then, at the end of phase

one, 173 published articles were selected and went further into the screening on full articles. Phase two excluded 158 articles for not meeting the eligibility criteria: 107 were out of from drug addiction theme such behavioral addiction, internet addiction, gambling and alcohol addiction, 29 had a different methodology, 14 were removed for not examining spiritual meditations and 9 were eliminated because of inadequate randomization. Out of 14 papers that included in the qualitative synthesis, 10 papers were selected for quantitative meta-analysis.

3.2 Characteristics of study

The summary outcomes for qualitative analysis were provided in [Table 1](#). Total sample size from 14 studies was 1402 participant, varying from substance used disorder population such as opioid dependence, amphetamine, methamphetamine and stimulant abuser. Two papers reported on substance used disorder with other illness which is depression and HIV. All of the studies investigated adolescence population. Six studies came from mindfulness meditation, 12-Step program and yoga each covered three studies and one study for each spiritual meditation namely Acceptance Commitment Therapy (ACT) and Hope Therapy Protocol. The comparison groups were varying such as CBT, Relapse Prevention (RP), 12-step, Methadone Maintenance Therapy (MMT) and physical exercise. Duration of session for the intervention was around four to 12 weeks for 45 to 90 minutes per session. Moreover, the most frequently used tools for primary outcomes were TLFB and ASI. In addition, the spiritual meditation either gives a positive effect or neutral when compared with control group. No negative effects have been reported.

Two mainstreams for spiritual meditation was spirituality-based intervention and meditation-based intervention. The themes such as beliefs in God, 'Higher Power', transcendence, mindfulness, pastoral service such as attendance to a church, moral values, meaning of life, self-knowledge and consciousness were included in spiritual meditation approaches. The interventions were conducted as psychotherapies, psychoeducation, meditation and pastoral services. Two studies were used psychotherapy approaches which are ACT and HTP. First, ACT included the values and mindfulness exercise as part of its protocol, while the HTP highlighted the meaning of life as one of the significant elements in the treatment. Meditation approach was found on nine papers. Mindfulness

Based Meditation was predominant in the selected papers; Mindfulness Based Intervention (MBI), Mindfulness Based Treatment (MBT), Mindfulness Based Cognitive Group (MBCG), Mindfulness Based Relapse Prevention (MBRP) and, Mindfulness Based Group Therapy (MBGT) followed by three studies on yoga techniques; Yoga, Raja Yoga and Hatha Yoga. Mindfulness is the trend meditation nowadays in western culture. Mindfulness meditation was adapted from Buddhism technique and was introduced by Kabat Zinn,²³⁻²⁴ which aims to bringing a certain quality of attention to produce positive outcomes. Another type of spiritual meditation that included in this paper is yoga techniques based on the influence of Hinduism. The main significant program in yoga is the breathing (pranayama) and repetition of mantra.²⁵ 12-step based intervention was found in three studies whereas two were the conventional 12-stage intervention and the other one was the integrated twelve step-based intervention. The integrated 12-Step is the enhancement program to fill the gap between sciences and practice of classical programs such as Alcoholic Anonymous (AA), Narcotics Anonymous (NA) and Marijuana Anonymous (MA).

3.3 Outcomes Measures

The primary outcomes measured for this current study was the impacts of spiritual meditation on the frequency, symptoms and intensity of drug consumption and the secondary outcomes were psychological and mental health aspects. Ten²⁶⁻³⁵ out of 15 papers reported on addiction related outcomes such as effects on the frequency, symptoms and intensity of drug consumption, while 13 papers^{26, 28-39} discussed on psychological and mental health impacts such as depression, stress, anxiety, attention, psychological, emotion and aggressiveness. Total 54 studies were found by obtaining the effect size and confidence interval for each study ranging from small to large effect size.

3.4 Risk of bias in individual studies

Table 2 provided the risk of bias in the individual studies scoring on randomization, blinding and participants accounts based on Jadad score. It illustrated that most of the studies shown high risk of bias with scoring values under two and below (11 studies). Four studies show a lowest risk of bias with an average (3 studies) and good risk of bias (one study) respectively.

3.5 Meta-analysis

For the primary outcomes, six papers^{26, 28-30, 37, 39}

with seven studies were usable in the result for the meta-analysis whereas the other six papers^{27, 29, 31-33, 35} did not present sufficient data for statistical test (mean, or standard deviation/standard error). For the psychological and mental health problems, five studies reported on depression,^{29-30, 37, 39} three studies on anxiety²⁹⁻³⁰ and two studies on stress^{33, 39} were selected for statistical meta-analysis. Figure 2 presented the forest plot using the random effects model for the standardized differences between spiritual meditation and control group.

The meta-analysis demonstrated significant heterogeneity on stress effect ($I^2=100\%$, 95% CI: -0.874, -0.634), favoring the spiritual meditation group as shown in Figure 2. Surprisingly, meta-analysis also presented a significant differences in pooled effects across studies in addiction related outcome ($I^2=27\%$, 95% CI: -1.703, -0.454) and anxiety symptom ($I^2=0\%$, 95% CI: -0.874, -0.634) and favoring spiritual meditation group in spite of low and no evidence of heterogeneity respectively. On the other hand, a moderate heterogeneity but no significant differences in pooled effect size ($I^2=51\%$, 95% CI: -1.903, 0.246) was observed for depression symptoms as also illustrated on Figure 2. Medium effect size was reported for the addiction related outcome which is (SMD=-0.222). On the other hand, large effect size was reported for depression and anxiety symptoms while, stress symptoms yield medium effect size respectively (SMD=-0.829, -1.522 and -0.754).

The remaining results of the psychological and mental that were not usable in meta-analysis due to the small number of studies or outcome measured were resulted either positive or neutral feedback. A study³⁸ showed that spiritual yoga increases the attention level of experimental group compared with the control group. On the other hand, mindfulness meditation surprisingly reported no significant difference when compared with control group as reported by Esmaeili and others.³⁶ Another study by Mallik and others³⁵ also found that yoga exercise does not affect the psychological distress among substance used disorder. Moreover, the other psychological and mental health also showed a promising result with the significant reductions on perseverance, sensation, urgency, social and hostility.^{29, 39}

Discussions

The present study was performed the systematic review and meta-analysis in order to response to the need of empirical evidence on the spiritual meditation on drug addiction. The findings

clearly indicated that spirituality element and meditation technique even in different programs could enhance the cessation of drug addiction comparing post-result between control and intervention group. The meta-analysis findings showed a remarkable reduction in addiction related consequences, stress and anxiety level. In spite of several data reported on association between spiritual meditation and recovery of drug addiction yet, to date no systematic review and meta-analysis has been carried out (to the authors knowledge) to gather a comprehensive overview of the scientific literature in spiritual meditation field for drug addiction population.

Despite the diversity of therapy program, the element of spirituality and meditation was targeted or integrated or added in order to improve the quality of therapeutic programs. A possible explanation for this might be that interference of spirituality cannot be ruled out in drug addiction recovery.⁴⁰ Relationship is consistent with the study of Chapmann, Seghastoleslam and others,⁴¹⁻⁴² which suggested that component of spirituality is the key role in the treatment of addiction. Moreover, another study also emphasized that feeling of spirituality can enhance the recovery process and act as a protective agent for cessation of addiction.⁴³⁻⁴⁵ Furthermore, one surprising variable that was found to be significantly associated with addiction was spiritual struggle.⁴⁶⁻⁴⁷ This finding may support the hypothesis that spirituality element plays a significant role in long term recovery of addiction as it can be categorized as spiritual illness. Although there is no definite meaning on spirituality on addiction, study by Cook⁴⁸ managed to explore 13 conceptual meaning of spirituality in addiction field; relatedness, transcendence, humanity, soul, meaning and purpose of life, authenticity, values, non-materiality, non-religiousness, self-knowledge, wholeness, creativity and consciousness. At least one of these components of spirituality was found in the protocol of the therapeutic programs.

Table 1 shows that all spiritual meditation produced a positive or neutral result for addiction related consequences, psychological and mental health outcomes. This finding is consistent with systematic evidence by Koenig⁴⁹ which stated there has good evidence of the religious involvement is correlated on the better mental health including the substance abuse. Most of the studies reported on addiction showed inverse relationship between religiosity and substance abuse as reviewed by

Bonelli and Koenig.⁵⁰ Moreover, in accordance with the review by Walton-Moss and colleagues, spiritual intervention decreased the frequency and intensity of substance abuse and incorporated with spiritual meditation and stronger level of belief.¹³ In addition, a systematic review on meditation⁵¹ also supported that drug addiction dependence was reduced when introducing meditate as alternative tools to control and suppress the mind related on drug addiction. This study confirmed that spiritual practice such as Transcendental Meditation (TM), MBRP, yoga, Qigong and Relaxation Response (RR) has been introduced as a good practice to treat substance abuse. Another source of study demonstrated that spiritual meditation reduced the risk of substance use.¹² However, the study also highlighted that only a few studies on the drug abuse than alcohol abuse were reported. The most popular study is marijuana. Very few studies reported on other powder, cocaine, opiates, amphetamines and other major street drugs. Thus, the present studies focused on the drug addiction population.

The most obvious finding to emerge from the meta-analysis was the spiritual meditation reduced significantly the addiction related consequences. This finding also accords with earlier discussion, which showed that spiritual meditation gave a positive impact on the cessation of drug addiction. This was parallel with the previous studies⁵²⁻⁵⁴ that spirituality element may act as a promising agent on the healing process as well as may decrease the intensity of consumption and promotes abstinence. In addition, research by Miller showed that spirituality dimensions play a profound association with the drug addiction recovery.⁵⁵ Although there was also a study reported that spiritual meditation may result on negative coping such as punishment of god, abandonment, karma, and guilt that lead to depression and stress,⁵⁸⁻⁶⁰ these results should be interpreted with caution. This conflicting result could be associated with the nature of the philosophy of religion perspective in different culture, orientation and dimension.⁵⁹⁻⁶¹

In terms of mental health outcomes, present meta-analysis found significant reduction of anxiety and stress symptoms. Contrary to the expectation, the meta-analysis evaluation did not find significant on depression symptoms yet, the trend moves towards the spiritual meditation group. Generally, spiritual meditation showed strong evidence in reducing the anxiety, stress and depression and addiction recovery symptoms.¹

^{51, 62} It seems possible that these results were due to the relaxation element during spiritual meditation process. There were several techniques and mechanism that demonstrated on how the spiritual meditation can bring calmness. First, the breathing technique is the most popular in the meditation techniques. It can be found in yoga, mindfulness meditation. Second, mindfulness and contemplate mind also can relax the mind with the focus oneself into the present time.⁶³⁻⁶⁴ Third, focusing the mind by repetition the word with or without spiritual meaning made the soul calmer, which is applied in mantra meditation, TM, *dhikr*, chanting, and *dua*.⁶⁵⁻⁶⁷ Forth, a specific movement during meditates or pray such as a movement of Salah and Kirtan Kirya.⁶⁸⁻⁶⁹ Fifth, connection with God also contributed to the feeling of calmness.⁷⁰ Consistent with the literature, a qualitative observation also found those participants were using spiritual meditation to overcome their illness and problems.⁷¹⁻⁷² These findings may reflect the increasing popularity of alternative and complementary medicine field to treat chronic disease, physical pain and mental health illness. Furthermore, the increasing knowledge in the brain imaging technology nowadays also assisted in the proof of spiritual meditation effectiveness on addiction recovery and mental health treatment. The studies⁷³⁻⁷⁴ showed that the addiction problem cause a distortion in the brain system such as reward system, motivation system emotion and control system. Several parts of the brain that take an important role in those functional systems are ventral tegmental area, amygdala, prefrontal cortex, hippocampus, dorsal striatum and cerebellum.⁷⁵ As a result, Witkiewitz, Lustyk and Bowen demonstrated that the neural changes responded to the craving negative effect of drug during mindfulness meditation,⁷⁶ may subsequently reduce the risk of relapse. Other than that, stress and depression were considered as factors of relapse.⁷⁷⁻⁷⁸ Thus, spiritual meditation may have cross-cultural universality in stress and depression regulation. Study by Chanu and Devi⁷⁹ resulted on activation of alpha and beta wave during spiritual mantra meditation by electroencephalogram (EEG) reading. This study proposed that repetition of spiritual words bring calmness even in a short time. Then, the study by Gao and colleagues⁸⁰ also found that repetitive religious chanting stabilized the emotions during stress condition. However, the mechanism on how spiritual meditation produced the calm still not established thus further

investigation is recommended.

One of the issues that emerged from spiritual meditation was the spirituality connection with human body were ambiguous and sacred due to the element of soul and spirit.^{81-82, 9} Thus, this issue came up with disagreement with the etiology of spiritual elements in medicinal field.⁸³ Critics have argued whether to accept it as a therapeutic agent due to the lack of proof and understanding on the spiritual effect on mental and physical health.⁸⁴ However, literally nobody can disapprove with the effects of spirituality on human self. Therefore, there were many qualitative explorations supported that the patient with critical illness were used spirituality practice or belief to give them motivation to survive and acceptance to overcome the hurdles of life.⁸⁵⁻⁸⁶ In addition, the exploration on spiritual transformation also gives researcher a peek of the key of spirituality as a healing treatment.⁸⁷

Another point worth to discuss was the twisted relationship of spiritual meditation with religiosity. Most of the spiritual meditation came from religious practice across the generation. For example, the 12-step facilitation derived from Christianity concept and it's secularized into AA, MA, NA, Cocaine Anonymous and Pills Anonymous to suit with the non-religious group.⁸⁸ It is also the same concept of mindfulness and compassion, derived from the Buddhism⁸⁹ then develop into mindfulness or compassion-based therapy such as MBRP, MBCG, MBT, MBI or ACT, Compassion Meditation. It also showed the same pattern with yoga, mantra meditation and TM that derived from Hinduism concept.⁹⁰ Another interesting perspective for abstinence and addiction are Islamic concept. The root of Islam is the oneness of Allah and the illness and recovering also come from Him.⁹¹⁻⁹³ Then, most of the existing psychotherapy also tried to integrate the spirituality element into the protocols such as CBT, RP and Motivational Interviewing.⁹⁴ Therefore, the diversity concept of spirituality, religiosity and human-self needed to be accounted during the intervention in order to achieve the optimum goal.

There are several factors that could explain the poor-quality risk of bias for the including papers. One of the explanations is the limitation of 'double blinding' component and the 'intention to treat'. This problem rose because the active participation between the facilitator and the participant, which resulted on the impossible to cut off the relations. Moreover, the involvement between the therapist

and the patient may improve the commitment and the motivations of the patient during the therapy session. This relationship may partly explain because of the protocol of therapy intervention that needs at least the applicant aware of with the procedure performed.⁹⁵⁻⁹⁶ Hence, the use of 'third party blind' may be a method to overcome the double-blinding problems. Further study on the strategy is needed.

The limitations of this review must be considered regarding the diversity of the spiritual meditation protocols. Other than that, the spirituality elements in the protocols are not well defined in the intervention group. Next, the possible study just assessed within the three main databases of medicinal field thus limited the exploration on other studies as well as articles published on the unpublished site such as book, thesis and proceeding.

Conclusions

The main purpose of this systematic and meta-analytic review was to examine the empirical evidence of spiritual meditation on the variables of addiction, psychological and mental health

outcomes, as well as its quality of clinical study and the methodological characteristic. Spiritual meditation made a significant difference compared with control groups on the cessation of drug and psychological and mental health symptoms especially levels of stress and anxiety. This study clarifies the reliability of spiritual meditation on addiction therapy problems, a point that has not yet been adequately established. Therefore, it is recommended that further studies investigated the mechanism of action of spiritual meditation on drug addiction as one of the complementary treatments and a specific and more focussing discussion on spiritual meditation to a specific type of drug addiction populations.

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Declaration of interest

The authors declare no conflict of interest.

Table 1. List of addiction related, psychological and mental health outcomes.

Author, Year	Participant	Number of participant	Scale (1st Outcome)	Scale (2nd Outcome)	Type of intervention	Control group	Intervention (Number of session)	Intervention (Duration of a session)	Follow-up	Result (1st Outcome)	Results (2nd Outcome)
			Addiction	Psychology & Mental Health			Session	Minute	Month	Addiction	Psychology & Mental Health
Kelly, et al., 2017	SUD	59	TLFB SIP-2R	BSI MDM-HAS	Pastoral	CBT, MET	Once a week, 10	60 to 90	3,6,9	N/+	N/+
Bowen, et al., 2014	SUD	286	ASI TLFB SDS	-	Meditation	TAU (12-Step) & RP	Once a week, 8	120	3,6,12	+/N/+	-
Fahmy et al., 2018	Opioid dependence	19	ASI	DTQ UPPS-P FMI	Meditation	TAU (CBT, Matrix)	Once a week, 4	5 to 40	-	N	+/+/+
Jenaabadi & Jahangir, 2017	Opioid dependence	57	DSM V	SCL-90-R	Meditation	CR & MMT	Once a week, 8	90	NA	N	+
Zullig et al., 2018	Opioid dependence	32	DDQ TLFB	ODSIS OASIS FFMQ	Meditation	TAU & MAT	Once a week, 8	90	-	N/-	+/+/+
Esmaili et al., 2018	SUD	60	-	CERO FFMQ	Meditation	TAU	Once a week, 8	90	-	-	N/+
Wells et al., 2014	SUD	234	SUC ASI DTCQ 8	SOCRATES SYRAAP PSS	Pastoral	TAU	Once a week, 8	90	3,6	N+/+	N+/+
Sadeghi et al., 2015	Amphetamine	50	-	BDI SHS SCWL	Therapy	CR	Once a week, 8	NA	-	-	+/+
Gaihre & Rajesh, 2018	SUD	96	-	WDSP SLCT	Meditation	Physical exercise	Once in two weeks, 6	90	-	-	+/+/+

Author, Year	Participant	Number of participant	Scale (1st Outcome)	Scale (2nd Outcome)	Type of intervention	Control group	Intervention (Number of session)	Intervention (Duration of a session)	Follow-up	Result (1st Outcome)	Results (2nd Outcome)
			Addiction	Psychology & Mental Health			Session	Minute	Month	Addiction	Psychology & Mental Health
Guydish et al., 2014	Stimulant abuse	234	ASI SUC	TSF ACES SHAQ 2	Pastoral	TAU	Once a week, 12	90	3	+/+	+/N
Wimberly et al., 2018	SUD	73	TLFB	PSS	Meditation	TAU	Once a week, 12	90	3	+	+
Shorey et al., 2017	SUD	117	PACS	AAQ-SA FFMQ	Meditation	TAU - 12 Step	Twice a week, 8	90	-	+	+/N
Ghouchani et al., 2018	Methamphetamine	30	-	GHQ BPAQ	Therapy	TAU	Once a week, 6	NA	-	-	+/+
Mallik et al., 2019	SUD	49	UA	GPDD	Meditation	TAU - 12 Step	Four times a week, 6	20-30	-	N	N

+: Positive Effect; -: No information; AAQ-SA: Acceptance and Action Questionnaire Substance Use Version; ACT: Acceptance Commitment Therapy; ASI: Addiction Severity Index; BDI: Beck Depression Inventory; BPAQ: Buss Perry Aggression Questionnaire; BSI: Brief Symptoms Inventory; CAPS: Clinician Administered PTSD scale; CERO: Cognitive Emotion Regulation Questionnaire; CR: Do not receive any treatment; DDQ: Desire for Drug Questionnaire; DSM-5: Diagnostic and statistically Manual of Mental Disorder; DTCQ 8: The Drug Taking Confidence Scale; DTQ: Distress Tolerance Questionnaire; FFMQ: Five Facet Of Mindfulness Questionnaire; FMI: Freiburg Mindfulness Inventory; GHQ: General Health Questionnaire; GPDD: General psychological Distress and Dysfunction; MAT: Medication Assisted Treatment; MDM-HAS: Multi-Dimensional Mutual-Help Activity Scale; N: No change; NA: Not Define; OASIS: Overall Anxiety Severity and Impairment Scale; ODSIS: Overall Depression Severity and Impairment Scale; PACS: Penn Alcohol and Drug Craving Scale; PSS: Participation Satisfaction Survey; PSS: Perceive Stress Scale; PTSD: Post Traumatic Syndrome Disorder; RP: Relapse Preventive; SCL-90-R: Symptoms Checklist-90–Revised; SCWT: Stroop Colour Word Test; SDS: Severity Dependence Scale; SHAQ 2: Self Help Activities Questionnaire; SHS: Synder Hope Scale; SIP-2R: Short Inventory of Problems-Recent; SLCT: Six Letter Cancellation Task; SOCRATES: Stage of Change Readiness and Treatment Eagerness Scale; SUC: Substance Use Calendar; SUD: Substance Use Disorder; SYRAAP: Survey of Readiness Alcoholic Anonymous Readiness; TAU: Treatment As Usual; TLFB: Time Line Follow Back; TSF ACES: Twelve Step Facilitation Adherence Competence Empathy Scale; UA: UriAnalysis, UPPS-P: Urgency Premeditation Perseverance Sensation Seeking Impulsive Behavior Scale; WDST: WAIS-R Digit Span Task.

Table 2. Risk of bias in individual study.

Author/s	Randomization 1	Randomization 2	Blinding 1	Blinding 2	Account of Patient	Total Score
Kelly, et al.	1	-	-	-	1	2
Bowen, et al.	1	-	-	-	1	2
Fahmy et al.	1	1	-	-	1	3
Jenaabadi & Jahangir	1	-	-	-	-	1
Zullig et al.	-	-	-	-	1	1
Esmacili et al.	1	-	-	-	-	1
Wells et al.	1	-	-	-	-	1
Sadeghi et al.	-	-	-	-	-	0
Gaihre & Rajesh	1	-	1	-	1	3
Guydish et al	1	-	-	-	-	1
Wimberly et al.	1	1	1	-	1	4
Shorey et al	1	1	-	-	1	3
Ghouchani et al.	1	-	-	-	-	1
Mallik et al.	-	-	-	-	1	1

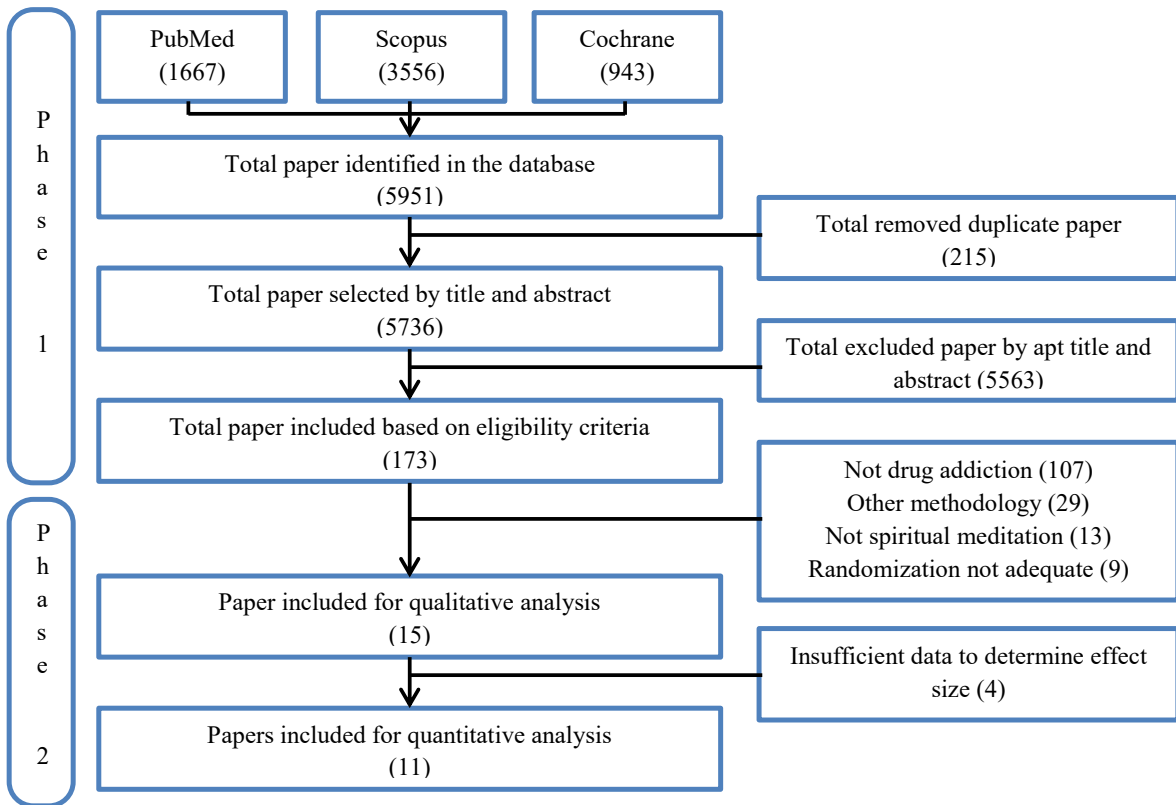


Figure 1: Selection of data based on PRISM report.

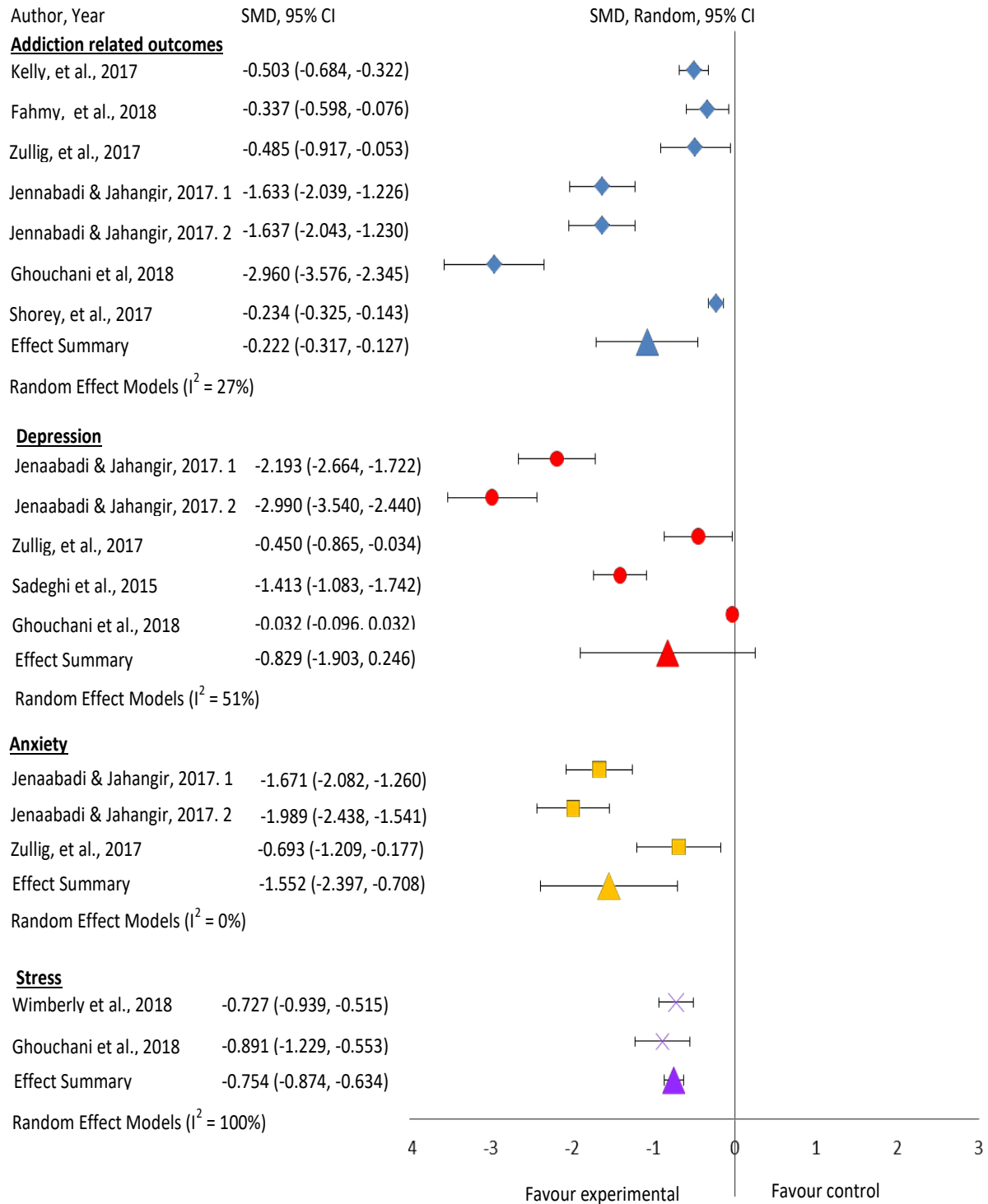


Figure 2: Effects of addiction related and psychological outcomes. A negative value of summary effect size suggests that spiritual meditation decrease drug addiction related outcomes and reduce depression, anxiety and stress symptoms compared to control.

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