




Yoga in stress alleviation: A therapeutic and psychodynamic perspective

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ABSTRACT

When it comes to decreasing the quality of life, stress has its own significance. Stress is often exemplified as a concept that induces perturbation in the alliance between the body and the mind. It is thought to induce a state of tension both physically and mentally. Over the past few years, yoga has enhanced its vogue logarithmically and has rejuvenated itself as a potential alleviator of stress. Understanding the role of yoga in mitigating stress levels depends solely on one's level of contemplation. Contemporarily, it is prescribed and implemented as an alternative to medicine therapy for recuperating patients dealing with considerable levels of anxiety, depression, etc. Chiropractors, physiotherapists, and physicians all around the world have started prescribing yoga and considering it as an essential ingredient of their medication, specifically for individuals in quest of an alternative to medical therapy. Yogasanas, in inclusion to pranayama and associated exercise postures, are widely embraced today as remediations for various ailments, which, if derelicted, can manifest into impairments that may last life-long. The present review aims to emphasize the role of yoga on the basis of the therapeutic and psychodynamic standpoints. The therapeutic standpoint mainly highlights the clinical implications and medicative efficacy of yoga in treating stress levels. On the contrary, the psychodynamic viewpoint mainly accentuates the role of yoga in mainstream mood and behavioral regulations and an apprehension of the underlying mechanisms.

Keywords: Interventions, Psychological, Psychodynamic, Stress, Therapeutic.

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INTRODUCTION

The word yoga has been derived from "Yoke," which intends to employ oneself to a way of life or to a discipline. In the Indian subcontinent, the culture and traditions of yoga can be attributed to as early as 3000 B.C. Yoga has epitomized itself as a topic of universal interest, ostracizing all kinds of religious customs and faith and comprising processes obligatory for inducing personal edification.¹ Presently, yoga is believed to outpace the intellectual facets and teleport one into a world constitutive of unclassified reality.² Today, it can be conceptualized as a contour of spiritual discipline involving an extremely subtle science that endeavors to induce harmony between the body and the mind. It is also an amalgamation of science and arts that constitute life. Yogic conventions divulge that the practice of yoga induces unification of the individual and universal sentience, thereby creating a perfect confederation not only between the mind and the body but also between nature and mankind. An individual who can witness this is said to be in a yogic state and is exemplified as a yogi. Also, the person is considered to have attained a state of complete salvation often invoked as moksha, mukti/ nirvana. The resolution of yoga, thus, is to achieve self-actualization and self-realization in order to obliterate all kinds of sufferings, ultimately directing to 'the state of freedom' (Kaivalya) or 'the state of liberation' (Moksha).³

On the other hand, stress is often elucidated as the incompetence to endure a real or imagined threat to one's holistic well-being, inclusive of spiritual, emotional, and physical multitudes that result in the setting up of a series of physiological adaptations and response cascades. As a matter

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of fact, stress is intricately linked to health and well-being. It is thought to impart pessimistic effects and depreciate the quality of life. It has its own profoundness in modulating the various physiological systems. It is also one of the major factors contributing to the maximum number of deaths per year, as per surveys based on mortality rates. It is also pertinent to individuals of all ages. Although a wide range of medications are available that minimize stress levels either by stimulating the immunological responses or the nervous system or by any other potential mechanisms, there is a need for an alternative to medicine therapy since medications may ostentatiously induce side effects that might adversely impact the holistic well being of an individual.⁴ Yoga has been effectively catering as a non-invasive alternative to medicine therapy for the eradication of stress. Although literature exists separately on the therapeutic and psychodynamic role

of yoga, the intent of the present review article is to combine and provide an encapsulated approach to the therapeutic and psychodynamic role of yoga in the alleviation of stress based on the research that has been conducted in the recent past in relevance to the context of the same.

YOGA- THE KEY FOR STRESS ALLEVIATION

Stress is a universal problem that has detrimental impacts on the health of a person. If left unprecedented, stress can reduce the efficiency of functioning of one's immune system and further might augment the disposition to chronic pain, lung cancer, cardiovascular diseases, etc. Researches reveal that 80% of all diseases and illnesses manifest from stress, particularly those of coronary heart disease, cancer, migraine headache, insomnia, etc.⁵

Yoga, which had its inception several millenniums ago, is conceded even today as a mind-body scheme of medicine. The state of the body is intensely linked to the state of the mind. Stress encourages perturbation to the physiological homeostasis and pivots the elevation of immensity of its various components like tension, anxiety, depression etc. Various breathing exercises and physical postures associated to yoga improve circulation of blood, uptake of oxygen, strength and flexibility of muscles as well as the efficiency of the endocrine system. Meditation induces a state of relaxation which helps in stabilization of the autonomic nervous system thereby shifting the vulnerability towards parasympathetic dominance. Yoga practitioners are espied to be more resilient to stress-stricken conditions and also possess reduced affinity for cardio-respiratory diseases, and they seem to enjoy several physiological advantages as well.⁶ Therefore, practicing yoga on a regular basis and incorporating it into daily lifestyles may actually cater as a complementary remediation for stress and also help one refrain from the cons of non-invasive and pharmacological treatments.⁵

Effects of Yoga Interventions on Pregnant Women

Research conducted in Bangalore on pregnant women subjects demonstrated that performing yoga on an everyday basis significantly trivialized the levels of perceived stress. The heart rate variability, which was represented in the study by means of a high frequency (parasympathetic) band, also escalated subsequently on exposure to Yoga interventions during successive weeks of pregnancy. On the contrary, the levels of the other two bands, namely- the low-frequency band (sympathetic) and the low-high frequency band, dwindled concomitantly. However, it was also observed that the level of the low frequency band also decreased later in the study in the group that sustained through Yoga interventions.⁷

Another study, longitudinal and prospective, was conducted on pregnant women subjects at Palmore Hospital, Kobe. The subjects were in the phase of attending maternity Yoga classes amidst 20 to 23 weeks of gestation. They were enrolled in the Yoga group. A complementary control group was also allotted for the study. The number of subjects recruited in

the experimental group was 38, and that of the control group was 53. In the course of their second and third trimesters, the participants completed questionnaires that principally comprised perceived stress scales and sleep logs. The heart rate variability (HRV) and salivary α -amylase levels were evaluated in three stages as exponents of stress- first at 20 to 23 weeks of gestation, second at 28–31 weeks of gestation, and third at 36–40 weeks of gestation, respectively. Data retrieved in the third phase enumerated that the HRV in the night and late-night spans were considerably higher in the Yoga group than in the control group. Post-administration of Yoga, the Salivary α -amylase levels were observed to be significantly reduced in the Yoga group. In inclusion to this, the duration of sleep during the night time was visibly higher in the Yoga group. Thus, it was inferred that the application of yoga induces Parasympathetic Nervous System activation, especially during the third trimester, and also induces sleep consolidation during the night, thereby instrumenting an all-around decrease in the α -amylase levels. This was also indicative of reduced stress levels.⁸

Effects on Academic Performance of Students

Another study on adolescent students appraised the effects of yoga in relation to stress on academic performance. The study consisted of 159 high-stress students and 142 low-stress students. A value orientation program and a yoga module consisting of asanas, meditation, and pranayama were administered for seven weeks in the experimental group. The results inferred that the students who practiced yoga performed better academically than the control group. Furthermore, a major observation also included that the students who endured lesser stress levels had better academic efficacy and inclination than students who endured higher stress levels.⁹

A similar study compared the coherency of yoga and physical education in terms of improving academic performance. The study comprised 112 students from a New York City public high school. Mindfulness, executive function, self-regulation, and other psychosocial variables were assessed in the course of the study. It was conjectured that students who implemented yoga in their lifestyles had better GPAs (annual grade point average).¹⁰

Figure 1 represents yoga's therapeutic and psychodynamic perspectives in the extermination of stress. The therapeutic standpoint comprises of approaches that lead to betterment

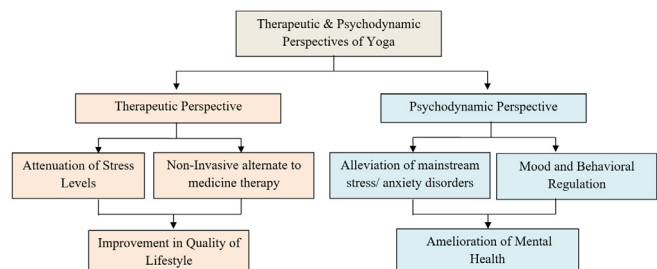


Figure 1: The therapeutic and psychodynamic perspectives of yoga

in lifestyle. The psychodynamic perspective, however, comprises processes that edify mental health and well-being status. The therapeutic and psychodynamic approaches of yoga in all-around stress alleviation indeed embody yoga as a non-invasive yet affordable conviction.

Therapeutic Standpoint of Yoga Interventions

Therapeutic yoga is often attributed to the practice of yoga and its applications for the treatment of diverse structural, physiological, and emotional sufferings or restraints. Regular practices of yoga enhance strength, endurance, and flexibility and promote the perceptions of friendliness, compassion, and increased self-control while creating a sense of calmness and well-being.

Mental health problems, including insomnia, stress, anxiety, and depression, are major reasons why individuals today are more inclined to yoga like complementary therapies. Yoga also encourages one to attain a state of calmness and tranquility, slackening the breath and focus on the present, thereby flapping the homeostatic equilibrium from the sympathetic nervous system and “the flight-or-fight response” to the parasympathetic system and “the relaxation response.”¹¹

The practice of yoga gives rise to poised energy, which is indispensable for the functioning of the immune system. Both chronic and acute stressors can entail the dysregulation of different immune parameters, such as inflammatory pathways, arbitrated through the different effector pathways, such as stimulation of the sympathetic nervous system or the modulation of the hypothalamic-pituitary-adrenal (HPA) axis, thereby causing diseases. Therefore, the potential mind-body therapies (MBTs), which strive to induce relaxation and lessen stress levels, can exert benign effects through the same pathways on the immune system, thus impeding a variety of diseases. Although complete justifications in accordance with the mechanisms of yoga are not available, yoga is often found to resemble other disciplines of MBTs in modulating stress response and regulating autonomic balance. Likewise, yoga may affect immune functioning modalities. This, in turn, might necessitate the bolstering of impaired immune function or modulation of a chronic inflammatory state in acute life-stress situations or detrimental HIV infection. In fact, yoga is already being rendered as a complementary intervention in a range of clinical conditions, yet empirical verification pertaining to the same is incumbent.¹¹

With the expansion of research on MBTs in general, several studies on the effects of yoga on immune functioning have been conducted over the past few years. Multitudinous meta-analyses and narrative reviews have been conducted in this regard, which have summarized the repercussions of different MBTs on the influences of yoga. Therefore, the exigency of presenting a comprehensive scenario of the existing literature on the effects of yoga on immune functioning is essential to propose justified recommendations for future research

in this field as well as to cite yoga and its evidence-based applications as clinical interventions.¹¹

Stress is a constituent that must be considered to abide by today's fast-paced life. It is an ingredient of life that can jeopardize our health conditions, laying it at stake. It has been a few years since the complicity of stress in every indisposition has been foregrounded. Stress, through the activation of the HPA axis, regulation of the sympathetic adrenal medullary system and the hypothalamic-pituitary-gonadal axis, provokes the immune response. Several cytokines, neuropeptides, hormones, and neurotransmitters mediate these convoluted synergistic interplays between the immune and central nervous systems. Stress affects the immune responses by inducing alterations in the dysregulation of immune cells and cytokines. Hypnosis and reclination of muscles, in inclusion to yoga and meditation, have been observed to curtail the aftermaths of stress (both psychological and physiological) on HIV infection and cancer.¹²

Role of Yoga in Mood Regulation

Yogic practices repress the areas of the cerebral cortex accountable for fear, rage, and aggressiveness and invigorate the reward centers in the median forebrain, thereby generating delightfulness and reward. This discretion affects consequences in subordinating the levels of anxiety, cardiac output, blood pressure, etc., and other stress variables.¹³

Recently, innovating and promoting ways of alleviating stress has been a topic of recurrent concern in the psychological framework. Attention allocation, abstinence, reappraisal, and other psychological strategies that can affect the process of intellectual thinking have also been investigated in the past. Based on inferences from previous studies, it may be recommended that yoga induces edification in emotional functioning among healthy individuals and individuals who suffer some forms of physical ailments, especially in terms of self-reported psychological variables. However, evidence in accordance with neurophysiological and behavioral correlates still remains unexplored. Yoga contributes significantly to fostering healthier psychological responses, thereby evincing its potential as an effective emotion regulation strategy.¹⁴

Impact of Yoga on Regulation of the Muscular System

Persistent yoga practices gradually loosen the muscles and connective tissues, which engulfs the bones and joints. This outlook is considered to be a major justification that yoga is affiliated with reducing pains and aches. It aids in building muscle mass and muscle strength, thereby fortifying the firewall against conditions of osteoarthritis, osteoporosis, and backaches.¹³

Role of Yoga on Blood Circulation

Yogasanas aim to increase the flow of blood and steep-rise the hemoglobin levels and number of red blood cells, which permits more oxygen to be delivered to the cells of the body, thereby ramifying their functions and adaptabilities.

It also diminishes the post-chemotherapy-induced nausea frequency, intensity, and intensity of anticipatory nausea. Additionally, in patients with lymphoma, yoga positively amplifies sleep patterns by inducing modifications in the central and peripheral NS modalities.¹³

Psychophysiological Impacts of Yoga

Despite uncertain legal boundaries, a number of medical guidelines consider yoga. Yoga is also regarded as a noteworthy constituent of multimodal in-patient treatment programs in a number of hospitals and is delivered by physiotherapists, chiropractors, and front-liners of other health fields. In order to establish yoga therapy as an acclaimed adjunct treatment for specific medical conditions, efforts were made in the German healthcare system, and the number of yoga therapy clinical trials conducted was extensive.¹⁵ The efficacy of yoga in handling mentally retarded children has also been explored.¹⁶ Yoga is also known to alleviate several neuropsychological diseases by inducing modifications in the CNS and PNS.¹⁷ Mind-body interventions such as *Hatha Yoga* and seated meditation have been extensively implemented as a therapy of self-help and have been more significant for challenging occupations such as professors, teachers, etc.¹⁸

In the case of attention deficit hyperactivity disorder (ADHD), the only approach is cognitive behavioral group therapy (CBGT), which has displayed promising results; however, for the same, a single CBGT is not available as an option for a population.¹⁹

Role of Yoga in the Maintenance of Intra-Ocular Pressure

Intraocular pressure (IOP) of the eye is essential for maintaining the optical power of the eye. *Tratak kriya*, one of the ancient yoga-based interventions that is inclusive of ocular exercises, might lead to the minimization of IOP in glaucoma patients by elevating the aqueous humor outflow through contraction and relaxation of the ciliary muscles. In addition to this, it was also evident that yoga-based interventions enhance the quality of life and minimize the stress levels in patients suffering from glaucoma.²⁰

Impact of Administration of Yoga on Patients with Rheumatoid Arthritis

In patients suffering from rheumatoid arthritis (RA), significant differences were observed in terms of perceptions of their personal experience of living with the condition to the status of their current medical management. In a study, based on participant's opinions, it was inferred that yoga interventions for the management of RA could be implemented as an adjunct therapy and can also be effectively acclimated for examining the outcome measures reflecting the mental, social, and physical well-being testifying patient's perspectives on its practicability.²¹

Yoga and its role in ameliorating panic symptomatology

Ameliorations in panic symptomatology were evident in a study pertaining to practices of both a combination of

psychotherapy and yoga and, in another case, yoga only. Cognitive behavioral therapy educates people on how modifications can be brought about in specific cognitive distortions and irrational beliefs. However, yoga, like contemplative mechanisms, promotes a general change in ways of dealing with private events. Improvements were evident in different mental health domains post-administration of yoga alone or yoga combined with psychotherapy. Future research on elucidations of both psychological and physiological variables could help better justify the mechanisms through which mind-body practices strive to improve mental health conditions.²²

Yoga and Diabetic Regulation

Yoga abates oxidative stress levels by reducing the levels of serum malondialdehyde, levels of leptin, and interleukin-6 and also refines the levels of adiponectin. In the case of diabetic patients, it augments the number of insulin receptors, thereby expanding the proportions of insulin receptor binding. Moreover, it improves insulin energetics by lessening fasting insulin levels and lugging the peak insulin levels to the left, thereby reinstating the insulin-glucose ratio.

Executing yoga regularly also reprimands the fasting blood sugar levels, levels of postprandial blood sugar, hemoglobin A_{1c} levels, and requisition for anti-diabetic drugs, which, in turn, is indicative of improved glycemic control.

Yoga functions mainly through the parasympathetic NS activation and its various modulatory anti-depressant mechanisms. It improves overall psychological and metabolic profiles, glucose tolerance, lipid metabolism, and insulin sensitivity by reducing HPA axis activation and perceived stress levels. On a positive note, yoga also influences the diabetic immune system. Several immune mechanisms and psycho-neuro-endocrine mechanisms potentiate type-II diabetes mellitus (DM), and yoga plays a significant positive role in improving the status of these systems, thereby assisting in combating stressors and achieving health.²³

Previous studies on yoga also disseminated that it promotes the reduction of triglyceride levels and low-density lipoproteins and increases the levels of high-density lipoproteins, thereby edifying the cardiovascular health status.²⁴

A study was conducted in Chennai on subjects with type II DM. Subjects recruited for the study were in the phase of attending tertiary care. The study comprised two groups. Group 1, in which the subjects were instructed to perform simple physical exercises, whereas group 2, subjects were advised to do static loosening exercises in addition to yoga for 50 minutes a week for five consecutive days. It was inferred that significant declinations in body mass index (BMI), blood glucose levels, glycosylated hemoglobin (HBA_{1c}), lipid levels, interleukin 6 (IL6), tumor necrosis factor α (TNFα) and thiobarbituric acid reactive substances (TBARS) were observed in the group which performed Yoga. In addition, there were significant improvements in adiponectin levels,

prostaglandin I2 synthase activity, and sleep quality among subjects who performed yoga. The non-Yoga group, however, did not show any significant changes.²⁵

YOGA: THE PSYCHODYNAMIC APPROACH

Non-intrusiveness, modesty, non-necessity of medical supervision for implementation, minimal health risks, and no side effects are undeniably some advantages of yoga. These features compel more patients who are intolerant to medicaments and make them more inclined to yoga therapy.

Impact of Yoga on Autonomic Indices

Voluntary breath exerts a positive influence on stress, emotion, and cognition, and in theory, it was also suggested that autonomic functions such as cardiac vagal tone and heart rate variability were affected by regular yoga practices.²⁶ Decreased parasympathetic NS activity (causative of physiological relaxation) and increased sympathetic NS activity (pertaining to the physiological reactivity) were remarked in patients abiding by depression and anxiety.²⁷⁻²⁹ This indicated that decreased sympathetic activity and increased parasympathetic activity were influenced by breath control, further manifesting in cardiac ventricular activity modifications.^{29,30} Some other contributory factors leading to such modifications include enhanced self-esteem attributable to subjection to new skills, diversion from negative thoughts, enhanced inclination towards positive thinking, and correlated physiological changes.^{31,32}

Impact of Yoga on the activity of GABA (Gamma Amino Butyric acid)

Allostatic load in stress response systems decreases by virtue of regular yoga practices. Reduction of allostatic load, in turn, leads to gentrification of optimum homeostasis levels. From previous hypotheses, it is apparent that stress induces GABA system hypoactivity, the primary domain of inhibitory neurotransmitters, inducing perturbations in the alliance between the autonomic NS and the sympathetic NS, thereby truncating the PNS activity and causing an all-round enhancement in allostatic load. It was further presumed that underactivity of the PNS and GABA systems engender vagal nerve stimulation, which is essential for allostatic load minimization. Post-traumatic stress disorder (PTSD), chronic pain, depression, etc., exemplify medical conditions that are profoundly exacerbated by stress, GABAergic activity, and low heart rate variability. Pharmacological agents that increase GABA system activity show traits of improvement post-administration of Yoga-based interventions. A major inference also stated that depression and treatment of epileptic-resistant cases generate vagal nerve stimulation, in turn corroborating the necessity for PNS hypoactivity correction as an integral constituent of a successful treatment scheme. In accordance with the proposed theory, reduced PNS and GABAergic activity by means of Yoga practices can be brought about, thereby resulting in edification of

the aforementioned conditions. These inferences have comprehensive implications in terms of the incorporation of Yoga-based practices extensively in rehabilitating a broad array of disorders exacerbated by stress.³³

Impacts of Yoga on inducing changes in biological markers

Yoga interventions potentially induce significant changes in biological markers. This is conclusive of the fact that Yoga may contribute towards restoring physiological balance and a state of homeostasis. Hypercortisolemia is a major disorder documented in cases of depression,³⁴ and in cases of some anxiety disorders,^{35,36} elevated cortisol levels were also witnessed. Patients suffering from anxiety and depression who performed Yoga displayed reduced cortisol levels.³⁷⁻⁴⁰ In a study, it was also observed that the levels of cortisol declined post-administration of Yoga for three consecutive weeks.^{41,42} Even after successful treatment, plasma Prolactin (PRL), whose production ceases during depression, is seen to have associations with increased risks of depression recurrence.⁴³ Plasma PRL levels also increased after the commencement of Yoga practices.⁴⁴ Evidence from previous research works also recommends that the prospect of depression decreases with an increase in prolactin levels. Other recommendations, including reduced sympathetic activity, enhanced parasympathetic drive, normalization of the activity of the HPA axis, and monoamine changes, might arbitrate the treatment responses. Another mechanism laid stress on the role of increased activity of GABA in the alleviation of anxiety disorders, depression, etc. Through magnetic resonance spectroscopic (MRS) imaging, it was observed that GABA levels in the brain ascended by 27% among regular yoga practitioners after conducting a single session of yoga, while no momentous change was observed regarding the same in the non-practitioner group.⁴⁵ Thus, from the study, the investigators could infer that Yoga can be effectively implemented for remediating "low GABA states" specifically in states of depression. Conversely, high GABA levels help import pragmatic approaches and senses of exhilaration.⁴⁶

The consequences of a 6-months Yoga intervention programme were explored in a study on the inflammatory biomarkers of breast cancer survivors. Results retrieved from the study were juxtaposed into the 'C group' or the exercise group, and the 'CE group' or the comprehensive exercise group. In the CE group, the subjects were allowed to choose their exercise protocols. "Before" and "After" assessments were inclusive of the anthropometric measurement of the subjects, estimation of the levels of inflammatory markers-IL-6, IL-8, cardiorespiratory capacity, C reactive protein (CRP), TNF α , etc. Improvements were eminent in terms of percentage decrease in body fat, but cardiorespiratory capacity or inflammatory serum markers conveyed no improvements. One-way analysis of co-variance was used for statistical analysis and comparison of the outcomes of CE

with respect to the other two groups. The cardiorespiratory markers, age, BMI, and serum marker baseline values were kept standard. Additionally, in any groups, no significant changes were observed in terms of any of the inflammatory markers. The results were benevolent of the effectiveness of yoga-based exercises modified for improving body composition in breast cancer survivors.⁴⁷

The proficient domains of immunopsychiatry and psychoneuroimmunology delve into the interplay between a person's mental state and the immune system. The available literature supports yoga's beneficial effects on cytokines such as TNF- α , IL-6, IL-1 β , interferon-gamma (INF- γ), and classical inflammatory markers such as CRP and cortisol.⁴⁸

Impact of Yoga on Depressive Disorders

An amalgamation of yoga and meditation is more efficacious than medication alone in cases of depressive disorders. A major rationale for this is the application of second-line monotherapy or vulnerability to medication explicitly in cases of depression, anxiety, and dysthymia. Extensive implementation of Second-line monotherapy is observed in circumstances of anxiety. However, only a few researches are evidential regarding justifications for conditions of PTSD and obsessive-compulsive disorder (OCD). Yoga seems to be much more cavalier in contrast to untreated conditions. Progressive relaxation of both anxiety and depression may positively aftermath the mood and anxiety symptoms that may be attributed to medical illness. It even proffers greater safety ranges and even better resistibility and proficiency in terms of being epitomized as a short-term treatment.⁴⁶

Role of Sahaj Yoga in Treating Psychosomatic Illnesses

A form of meditative technique, Sahaj Yoga, has been found to have profound effects on psychosomatic illnesses. The research was conducted on 30 subjects suffering from major depression. The number of males and females recruited for the study was 19 and 11, respectively, and the age range for the study was set between 18-45 years. Diagnosis of depression was scrupulously adhered to the Diagnostic and Statistical Manual of Mental Disorders IV (DSM IV) criteria. The subjects were then assorted to two groups: Group 1 comprising of patients on whom the conventional anti-depressants were administered and who were subjected to daily Yoga practices. The group was constituted of 10 male and five female subjects. The second group was inclusive of patients who were subjected to conventional anti-depressant treatments. Under the assiduous supervision of a Sahaj yogi, the Sahaj Yoga was conducted perpetually for eight weeks. The patients were subjugated to the Hamilton Rating Scales for Anxiety (HAM-A) and the Hamilton Rating Scales for Depression (HAM-D) during the first phase of the study. The scales mentioned above were appraised subsequently after two weeks of treatment. Both the groups flaunted improvements in terms of HAM-A and HAM-D scales. Patients who went into revocation succeeding the two-month intervention were significantly higher in group 1.⁴⁷

Role of Yoga in treating Major Depressive Disorders (MDDs)

Existing literature is conclusive of the fact that interventions for treating MDDs are deficient, and on subjection to initial treatment, only a few of them respond. However, the basis of emergent therapy is the theories associated with neuroplasticity. However, limited research exists on the impacts of Yoga on neuroplasticity. In relation to this, a study was directed to determine the effects of 12-week Yoga-and-meditation-based lifestyle intervention (YMLI) on systemic neuroplasticity biomarkers and severity of depression on exposure to routine drug treatments in adult MDD patients. Fifty-eight patients were recruited for the study and allocated to the Yoga and Control groups. The Beck Depression Inventory-II (BDI-II) scale was used to judge the graveness of depression. The pre and post-intervention blood samples were collected for biomarker estimation that headlined neuroplasticity characterization, including biomarkers of mind-body communication and cellular health. The BDI-II score showed a significant reduction, and the brain-derived neurotrophic factor (BDNF) displayed elevation in the YMLI and control groups. In addition to reduced DNA damage and balancing oxidative stress, increased Telomerase activities, Dehydroepiandrosterone sulfate (DHEAS) and Sirtuin1 levels, and decreased IL-6 levels and cortisol were observed due to YMLI activity. In order to complect depression severity with the neuroplasticity biomarkers, multiple regression analysis was implemented. The BDNF 'group' displayed a "post-intervention interaction," indicating that the Yoga group had fewer BDI-II scores and more BDI-I scores than the control group. Regarding telomerase activity, levels of Sirtuin1 displayed increments, and cortisol levels showed declinations. It was inferred that betterments induced in systemic biomarkers of neuroplasticity are linked to a decrease in depression severity in MDDs after YMLI. Thus, for the management of MDDs, YMLI can be contemplated as an effective therapeutic intervention.⁴⁸

Role of Kundalini Yoga in Treating Psychiatric Disorders

A vast array of meditation techniques is included in Kundalini Yoga, and many of these were specifically conceived for the alleviation of psychiatric disorders. For the treatment of OCDs, the fourth most common type of psychiatric disorder and tenth most disabling disorder worldwide, one such technique was found to be efficacious. Techniques included in the OCD protocol were profound for treating diverse anxiety disorders, as well as for fear management; some were observantly used for inducing tranquility of mind, some for confrontation of mental challenges, and some for transposition of negative thoughts into positive ones. Besides this, techniques for challenging phobias, major depressive disorders, dyslexia, grief, insomnia, addictive and substance abuse disorders, and sleep disorders are available in abundance as well.⁴⁹

Psychophysiological response to stress in adolescence

In a study, the psychophysiological response to stress in adolescence was investigated. The foundation of the study

was based on exploring the role of emotional intelligence and regular exercise in keeping pace with stress mechanisms in adolescents. Exercise-induced protocols of stress alleviation include neuro-physiological mechanisms in addition to several psychophysiological mechanisms of emotional intelligence for managing stress in adolescents. With a target age group, the research on gender variation in generating stress response and corresponding strategies available for coping with stress have also been explored. Available literature also advocates the neuro-physiological constructive role of exercise among adolescents in lessening stress levels. Participation in exercise-induced and emotional intelligence (EI) development programs is skillful and potentially can outpace stress-mediated turmoils in an adolescent's personal and social life, as evidenced by past research. The study was inferential to the incorporation of regular exercise programs and the enactment of emotional intelligence skills in the mainstream school curricula as obligatory for students in the phase of adolescence for the accomplishment of a balanced and healthy lifestyle.⁵⁰ In addition to the psychophysiological way of emotional intelligence in stress management in adolescents, several neuro-physiological mechanisms have also been probed, which are significantly involved in exercise-induced procedures of stress eradication.⁵¹ Incorporating various exercising protocols in training regimes also induced ameliorations in physical and physiological health status in athletic populations like Judo Players and non-athletic populations, such as that of sedentary post-pubertal boys and girls.⁵²

Effects of Sudarshan Kriya Yoga (SKY) in treatment of Major Depressive Disorders

In a study, the repercussions of performing partial and full SKY on patients suffering from MDDs were inspected. The study comprised 15 subjects enduring major depressive disorder (mean age 29.5 years) who received complete treatments of SKY daily and 15 other subjects (mean age 34.2 years) suffering from MDDs who received SKY treatments partially. The subjects were instructed to complete the Beck Anxiety Inventory and BDI weekly. The results were conclusive of the fact that anxiety and depression scores in both groups ceased significantly and in equal magnitudes post-subjection to treatment regimes. Seven subjects belonging to the partial SKY group and 12 subjects belonging to the full SKY group achieved a 50% declination in total scores of BDI. It was thus inferential that full SKY and partial SKY are belligerent in regard to their anti-anxiety and antidepressant efficacy among patients with major depressive disorders.⁵³

Forty-six patients undergoing diagnosis of depression and anxiety disorders (DSM-IV) were recruited in a study. The subjects were assigned into two groups: Group 1, which received conventional therapy that catered as the control for the study, and group 2, which received conventional therapy in incorporation to SKY for 15 days and served as the treatment group. Questionnaires were implemented for quantification of depression and anxiety levels. For the

appraisal of the coupling of the cardiorespiratory system and arterial levels of Calcium in the heart (CAC), analyses of the cardiorespiratory traces were conducted through autoregressive monovariate and bivariate spectral analysis. After two weeks of intervention, the treatment group displayed a reduction in levels of anxiety and stress. Moreover, in the treatment group, sympathetic modulation and CAC were significantly lower, and parasympathetic modulation and cardiorespiratory coupling were significantly higher than those of the control group. The status of cardiorespiratory coupling and CAC, as well as anxiety and/or depressive disorders, were ameliorated by training high-intensity breathing using the SKY approach. Thus, it was evident that for improving symptoms and reducing cardiovascular risk in patients with anxiety/depression disorders, the SKY training may be an effective pharmacological intervention.⁵⁴

DISCUSSION

As per the aforementioned corroborations, it can be elucidated that when it comes to the alleviation of stress from psychodynamic and therapeutic standpoints, yoga has its own distinctiveness. The multimodal perspectives of yogic postures, in addition to their health benefits, indeed have embalmed Yoga as an alternate remediation of many ailments, which otherwise have to be treated with pertinent medications and sometimes with lucrative surgical procedures.

Incorporating yoga into daily lifestyles can not only pivot in minimizing the plausibility of various forms of stress but also provide positive intellect for navigating various aspects of life. The perennial setup of various Yoga institutions across the globe has not only universalized Yoga but also has made it easily accessible and within reach of individuals belonging to different age groups. Salvation and Meditation, two of the major strives of Yoga, can be accomplished through its practices but in the presence of a qualified Yoga instructor. Apart from the spiritual and intellectual benefits that yoga manifests, it is significant that yoga often regales as a mind-body exercise that indents the unification of the mind, body, and soul.

CONCLUSION

Thus, from the present review, it can be acclaimed that Yoga has its own significance in terms of proffering mechanisms that are likely to affect the various spheres of life, be it physical, psychodynamic, or therapeutic. From the psychodynamic perspective, some of its potential implications include the cases of epileptic, chronic pain, and depression patients where it increases the GABAergic activity, thereby inducing ameliorations of these symptoms. It also pivots the activation of the PNS by decreasing the Salivary α -amylase levels and influencing sleep consolidations. Besides this, exposure to Yoga interventions also promotes edifications of the various biological markers like IL-6, TNF- α , cardiorespiratory capacity, etc. Additionally, yoga also helps

minimize the levels of oxidative stress markers like levels of leptin and serum malondialdehyde and improves the levels of adiponectin. Furthermore, yoga is found to be equally effective in remedying various psychosomatic illnesses. From the therapeutic perspective, it is emblematic that different forms of yoga, like Sahaj Yoga and Sudarshan Kriya Yoga, possess anti-anxiety and antidepressant effects on major depressive disorders. Yoga and its Autonomic regulation also influence self-esteem, leading to divergence from negative thoughts and concurrence towards positive thoughts. Yoga-based interventions are currently perpetually assisting people in their quest for equanimity and providing them with better clarity in contemplating the various dimensions of life. It is considered an effective coping mechanism for achieving needs, self-actualization, and individual goals when executed with utmost wisdom. Confederation of yoga into regular lifestyle practices may augment an individual's mental and physical states and also bestow them with better lifestyle approaches.

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PEER-REVIEWED CERTIFICATION

During the review of this manuscript, a double-blind peer-review policy has been followed. The author(s) of this manuscript received review comments from a minimum of two peer-reviewers. Author(s) submitted revised manuscript as per the comments of the assigned reviewers. On the basis of revision(s) done by the author(s) and compliance to the Reviewers' comments on the manuscript, Editor(s) has approved the revised manuscript for final publication.