

A METHODOICAL REVIEW ON ROLE OF YOGA FOR ALLEVIATING CHILDREN STRESS AND DEPRESSION

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Abstract

The prevalence of psychological issues in kids and adolescents is a growing concern for primary doctors. The present article compiles and examines the findings from twelve studies on the subject of yoga's impact on children's psychological well-being. For this objective, many databases were accessed, including Google Scholar, Science Direct, PubMed, and Web of Science. Despite technical difficulties such as small numbers of participants along with a lack of information on treatments, the research supporting yoga therapy for children is positive. As the current study has shown, yoga treatments have the potential to be used in schools to help with mental health concerns including depression and stress.

Keywords: Yoga, stress, depression in school children, adolescents, mental health

Introduction

The World Health Organization estimates that one million school-aged children (those between the ages of 11 and 15) suffer from a psychological condition, including symptoms like depression and anxiety. Particularly, there has been a rise in the proportion of youngsters reporting inadequate mental health throughout India and globe. The World Health Organization found that mental health issues are more common in adolescents [1]. Various psychological, physical, including social circumstances may impact youngsters' mental health. For example, being exposed to destitution, assault, or trauma can produce mental illnesses including sadness, anxiety, irritation, discontent, or rage. Frequent or sudden mood swings, emotional outbursts, along with the development of physical complaints like headaches or discomfort in the stomach etc., may all be signs of an emotional problem in teenagers. The signs may often overlap across different disorders. Negative effects on cognition in adulthood could result from stress in childhood [2].

According to Eva and Thayer, a number of risky behaviours among youngsters include adolescent pregnancies and parenting, hazardous sexual practices, criminal behaviour, substance misuse, poor academic performance, and dropping out of school. Variants like sex, ethnicity, functioning of the family, parents psychological state, parents educational standing, their relationships with spouses, along with type of family, are associated with an increased risk of negative interpersonal as well as familial outcomes for adolescents suffering from anxiety and depression [3]. Nonetheless, research indicates that resilience—which includes skills like stress management and coping—can mitigate trauma's deleterious effects [4]. Preventing metabolic or cardiovascular problems, as well as psychological problems in later adulthood, may be achieved by therapies that begin during the preadolescent age.

According to the National Healthy Child Programmes, children, particularly those whose socioeconomic circumstances are limiting their development, must receive early intervention services. All three of these interconnected systems—the immunological, the autonomic nervous, and the endocrine—help the body adapt to stressful situations. Detrimental psychological as well as behavioural outcomes might be more likely in young people from low-income backgrounds who endure childhood stresses, which may impact development of the brain, negatively impact intellectual ability along with management of emotions, and so on [5].

In India, yoga first appeared. 'Yuj,' a Sanskrit term meaning "oneness of an individual's mental awareness as well as spirit into the consciousness of the universe", is the origin for the practice of yoga. It is the goal of the physical, mental, and spiritual aspects of yoga to work in harmony with one another for the benefit of one's health and pleasure. While yoga has been around since the dawn of civilization, it wasn't until 2000 BCE that it was recorded in ancient Hindu text. There are three primary elements of yoga that work together as an intervention: physical movement (known as "asanas"), breathing exercises (known as "pranayama"), and meditation on the present moment [6].

Incorporating yoga procedures as a means of both prevention as well as therapy might help with mental health. By teaching kids to focus on their breathing, meditate, and relax their minds, Kim et al. discovered that 12-week yoga program in schools improved students' self-esteem and body image. The lack of self-assurance among yoga instructors was a worry voiced by a few teachers in the research. They are either too busy with their curriculums to learn how to teach or conduct yoga classes, or they just don't have the skills [7].

According to Khalsa and Butzer, yoga constitutes a comprehensive series of procedures that incorporates physical movements, breathing activities, as well as methods for relaxation [8]. Research has indicated that yoga can improve the psychological as well as physical well-being in kids. Programmes based on yoga as well as meditation have garnered attention from researchers throughout the globe. Increased stamina, flexibility, strength, coordination, posture, and cardiovascular health are just a few of the many advantages of regular yoga practice. Moreover, yoga doesn't call for a lot of room or special tools, is simple to pick up, and has gained popularity all around the globe [9,10].

Teaching kids' yoga is a great way to help them channel their energy in a good direction and relax, which may be particularly helpful when they're feeling anxious. People who are violent and disruptive may benefit from it. Possibilities for improved health, higher self-esteem, and less antisocial behaviour in children have been suggested by yoga research. The review by Khalsa and Butzer found that teaching yoga in the classroom is an enjoyable, simple, and economical option [8].

Teachers perform a crucial role in introducing yoga into classrooms, according to Wolff and Stapp [11]. The capacity to self-regulate while strengthening focus were both reported as being enhanced with the use of yoga breathing methods. However, a pilot study conducted by Butzer et al. on youngsters ranging in age from seven to nine years old indicated that such intervention lasting ten weeks resulted in notable improvements in interpersonal communication, concentrating ability, mood, trust in yourself, educational achievement, etc. [12].

The purpose of this methodical examination was to look at how yoga affected kids' mental health, namely their stress levels and depression.

Pathophysiology of stress and depression

The neurological, endocrine, and immunological systems are all known to undergo a cascade of changes in response to stressful life experiences. Some of the well-known impacts of stress include activating the Sympathetic Nervous System (SNS), starting an elaborate chain of inflammation reactions, and stimulating the Hypothalamic-Pituitary-Adrenal (HPA) axis. Under stress, the limbic system transmits impulses from the upper cortical regions to the hypothalamus. The secretion of Corticotrophin Releasing Factor (CRF) occurs in specific regions of the Para Ventricular Nucleus (PVN). At the same time, serotonin, nor-epinephrine (NE), acetylcholine (Ach), as well as vasopressin are discharged inside the circulation of the body. Glucocorticoid synthesis occurs in the cortex of the adrenal glands as a consequence of these. Catecholamines (CC) are released into circulation simultaneously by the SNS. Thus, GCs as well as CCs are the primary stress hormones that influence neuronal development and perseverance, hippocampal growth, metabolism, along with immunity, among other brain processes [13,14].

Despite the lack of definitive proof regarding the neurological processes contributing to the development of stress-related depression, the indications associated with depression indicate that regions of brain like the hippocampus, amygdala, thalamus, etc. are likely involved frequently. There is evidence that chronic stress may affect mental as well as physical well-being by inducing inflammatory reactions [15]. Stress and different brain components interact as shown in Figure 1.

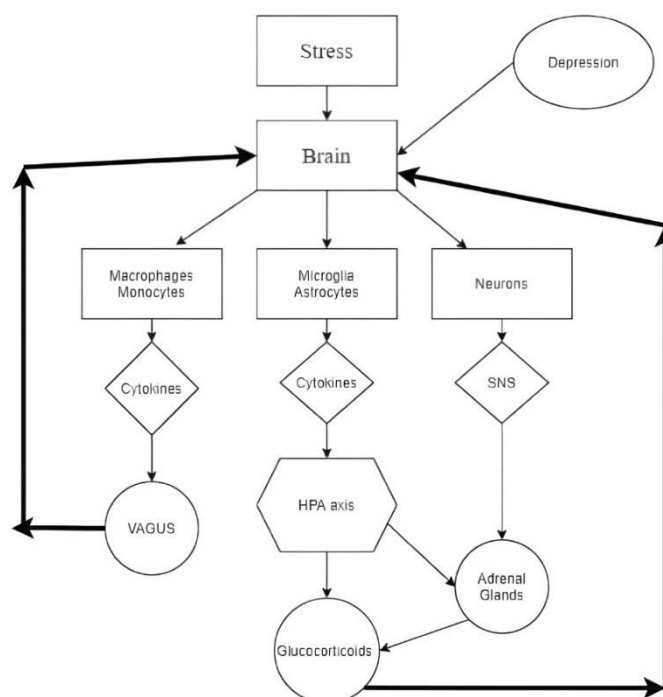


Figure 1: Stress Pathophysiology [15]

The production of cytokines including interleukin-6 (IL-6), interleukin-1 β (IL-1 β), and tumor necrosis factor-alpha (TNF- α) that are known to cause symptoms of depression is a well-known consequence of the body's stress reactions. Inflammatory indicators have the potential to impact several CNS processes, leading to sleep disruption, cognitive impairment, and decreased monoamine levels—all that may worsen the symptoms of depression [16].

The majority of depressive persons also have higher glucocorticoid levels, according to reports. Along with high levels of inflammatory cytokines, which reduce cortisol's effect by decreasing cortisol receptor function, resulting in excessive amounts of cortisol, which can prove especially dangerous. When cortisol levels are high, it may hinder the appropriate control of glutamate in cells, which can lead to cell damage and death in many different kinds of cells, including hippocampus cells [17]. Neuro-steroids, such as GABA-A, DHEA, and allopregnanolone, are seen in Low levels in untreated depressives.

Mechanisms of stress management through Yoga

Mental health issues like stress, sadness, anxiety, and so on may be effectively managed with the help of yoga. As well as improving overall health, regular yoga practice produces physiological changes, including lowering blood sugar, blood pressure, as well as cortisol levels. Changes in the metabolism of monoamines (serotonin, noradrenaline, and dopamine) are at the heart of the psycho-physiological illness known as depression [18]. The significance of central neurotransmitters like GABA in depression is significant. Yoga aids in the treatment of depression via many ways.

A number of psychosomatic ailments have shown improvement after practicing yoga, a kind of medicine for the mind and body. Physical movements, breathing techniques, mindfulness practices, including the moral principles of yama and niyama are all part of yoga, which aids in emotional cultivation and the reduction of inner problems. A recent evaluation of yoga's impact on stress found that yoga interventions significantly reduced stress levels [19].

Several molecular pathways have shown promise for yoga's potential to alleviate stress, including those involving the ANS, HPA axis, peripheral nerve system (including GABA), limbic system, endocrine functions, inflammatory responses, and so on. Yoga may have an impact on the functioning of endothelial cells, nitric oxide release, natural the psychoactive substances, as well the expression of genes, according to previous research. There is some evidence that yoga may have a positive impact on vagal nerve stimulation, baro-reflex responsiveness, and variability in heart rates (HRV) right away [20,21]. Reducing stimulation of the vagus nerve has several beneficial effects, including lowering stress hormone discharge, decreasing sympathetic to parasympathetic activity, along with decreasing activation and responsiveness of the sympatho-adrenal system as well as the HPA axis.

By activating the parasympathetic neural system, which is responsible for relaxation, yoga helps to counteract the effects of the sympathetic nervous system, which is responsible for the instinct to flee or fight [22]. As a result of its effects on the HPA axis and the sympathetic nervous system, yoga practice has the potential to lower levels of stress-related hormones such as cortisol and catechol-amines, which in turn reduces anxiety and promotes a state of calm.

Procedure Followed for data collection and analysis

Extensive systematic literature searches were conducted on PubMed, Google Scholar, Science Direct, and Web of Science databases to identify relevant research. When searching for this article, we used terms like "stress with yoga AND therapy" and "yoga/mindfulness with school children," among others. "Stress management," "stress reduction," "stress relief," "stress," "well-being," "mental health," "emotional health," and "psychological well-being" were among the other terms employed. Various databases were queried for relevant articles using these terms. We relied heavily on PubMed's Advance tool for the majority of our searches. We only looked at English-language papers published between 2010 and 2021.

We used our pre-established inclusion and exclusion criteria to filter the titles and abstracts of all the articles. We tried to get the whole papers for screening, but in cases where that wasn't possible, we used abstracts to screen the articles. Before coming to a final consensus on which publications to include in this review, each author conducted their own independent evaluation of the relevant literature.

Inclusion and Exclusion Criteria

We considered treatments that evaluated children's psychological wellness (anxiety, poor mood, depression) via yoga practice, which involves movements along with meditation. We omitted interventions that did not contain yoga.

Only studies that used randomized controlled trials (RCTs) methodology were included, not those that used prospective or retrospective cohorts.

Excluding studies involving children in special care, all studies involving children in regular school environments were considered for inclusion.

In addition, research involving just those All children participated in the study had to be between the ages of 5 and 16. We did not include studies that included participants older than this age group.

Evaluations from parents, children, or educators were considered for inclusion in studies with clinically verified mental health outcomes.

Because of the studies' heterogeneity—i.e., different outcome measures used in each study and the fact that some did not even look at anxiety or depression as outcomes—a methodical review was conducted instead of a meta-analysis.

Studies on Yoga for Child stress and Depression

Using the inclusion and exclusion criteria described earlier, our evaluation narrowed the pool of papers from 600+ to around 12. The control groups in all of the included trials did not participate in any kind of yoga intervention. For the first time ever, this meta-analysis has excluded all except randomised controlled trials (RCTs) that examine the impact of yoga programs in schools on students' emotional and psychological well-being. It is challenging to compare the present results with earlier analyses of the literature since those studies comprised

trials involving a wide variety of age groups and focused on a wider range of indicators of outcome.

Every study used some kind of yoga intervention, but they didn't all utilize the same assessment tools, which might explain why they came to varied conclusions. While many of the included research did find yoga to have favourable impacts on students, a few quantitative studies failed to find any statistical significance when comparing yoga with those in the control group that received physical education.

Students who loved the sporting component of physical education reported a disdain for yoga, according to the results of the qualitative conversations conducted by Conboy et al. [23]. A similar randomized controlled trial (RCT) with seventh graders in the United States was conducted by Butzer et al. They found 149 kids who were going to skip PE class altogether and instead take part at 32 lesson yoga program. Both sets of students were given evaluation forms to fill out before and after the intervention. The students' reactions to yoga and physical education were varied; they wanted to choose one or the other, and the athletic male students were particularly critical of the idea of yoga taking the place of physical education for a long time [24].

They did find that kids mentioned breathing methods positively, but they left out interviews with school personnel, who may have had insight into how both students and teachers felt about the yoga intervention. This might be taken into account in future studies to ensure a comprehensive body of research.

Although the youngsters in the focus groups indicated favourable impacts, Conboy et al. found no evidence of stress reduction in the qualitative interviews. Reasons for this might include youngsters feeling pressured to speak positively about the intervention and their peers' expectations of them [23].

Both White (2012) and Haden et al. (2014) studies conducted in the United States found no statistically significant variations among the reference group with the yoga group when it came to physical education [25,26]. When it became clear that some of the students enrolled in a physical education class had been more active, those participating in yoga research by Hagins et al., were not happy to be practicing yoga. It is possible that these emotions affected the results of their research [27].

Hence, it is important to steer clear of student expectations right away in the beginning of research design and think about the technical aspects of RCTs in future investigations. The non-intervention group in White's study reported higher levels of felt stress, despite the fact that both groups reported increased levels of self-esteem as well self-regulation. White theorized that participants' knowledge of their own stress levels may have helped them develop effective coping mechanisms, and that the research's negative results may have resulted from the misuse of psychometric instruments. On the other hand, Hagins et al. found that students' stress sensitivity was not reduced any more in the yoga intervention group compared to the PE group.

Methodological as well as statistical issues can account for the ambiguity in experiments. Possible explanations for the lack of statistical relevance in the findings include insufficient sample numbers, variation in the kinds of yoga taught, brief sessions, and improper poses for youngsters. Nevertheless, these findings contradict those of Khalsa et al. and Daly et al., who found that yoga may enhance mood including control of anger, along with emotional regulation, respectively [28,29].

Only one study, that of Pandit and Satish, included three independent variables. In two urban schools in India, they enlisted the help of 178 students [30]. Conversely, pupil descriptions about themselves as well as other people's behaviour had a significant role in the experiment conducted by Vel'asquez et al. They were afraid the assessments given by instructors and parents would be prejudiced, so they opted not to use them [31]. Nevertheless, they suggested that in order to supplement the students' perspective on yoga practice, future study should use data collected through observations.

There is encouraging research about yoga therapies for children. But it lacks information on the intervention while employing tiny samples, which are methodological drawbacks. The suggested time frame for the practice of yoga is approximately 45 minutes up to an hour, however in certain investigations where students benefited from yoga, the investigation durations were shorter, lasting for about 30 minutes [20,23,26]. Research comparing the benefits of yoga to those of PE has shown consistent findings across the board. It may be useful to have separate intervention groups and a separate control group.

Using the same procedure on big numbers of participants with follow-ups, future research should examine the lasting impact of yoga upon feelings of self-worth in children from diverse socioeconomic backgrounds. Pandit and Satish noted that when children are already swamped with schoolwork, yoga treatments are unlikely to have any positive impact. The precise moment of the intervention is an important consideration within the course of development spans, such as before or after exams or at the start or conclusion of the school year [30]. Additionally, research has shown that it takes three months of regular yoga practice before any noticeable benefits kick in. Because of this, studies in the future should take this into account and provide yoga treatments for longer than twelve consecutive weeks.

Conclusion

The included researches have shown encouraging findings regarding the benefits of yoga on the mental health of school-aged kids as well as teens. According to the research, yoga may assist kids who are in school deal with stress and depression. More people may experience the positive effects of yoga. If children are taught yogic skills, they won't require medicinal treatments when they're stressed.

This meta-analysis of 12 randomized controlled trials (RCTs) looked at the effects of yoga programs in schools on students' mental health. Following treatments, children's mental health was assessed in all of the investigations. Despite the fact that all studies have shown that yoga is beneficial for students, there is still room for debate due to the lack of excellent in quality RCTs with conflicting findings.

The main reason this research couldn't go farther was because the literatures were so different. Not all publications provided a comprehensive explanation of the intervention, and pranayama as well as asana were not taken into account independently.

So, for example, when deciding what kind of yoga is appropriate for kids, future studies should be standardized, take participants' preferences into account, and take instructors' and parents' opinions into account. There has to be a rapid and thorough investigation and assessment of yoga programs that improve mental health since the prevalence of childhood stress and depression is on the rise.

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