

Effects of Yoga among Adolescents on Social Cognition

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Received Date: February 17, 2024; Published Date: April 30, 2024

Abstract

The pubertal changes during adolescence often lead to exploring new encounters and better understanding and interest in others. For adolescents, social cognition is understanding their social world characterized by neural activities in the brain. Social cognitive dysfunctions can significantly impact an adolescent's ability to appropriately identify, interpret, interact, and respond to social cues. Early identification and interventions to address these minor deficits are crucial to alleviate the negative impacts on adolescents' social cognition and, thus, their mental health. This is the first attempt in India to examine the effectiveness of Yoga on adolescents with low social. Quasi-experimental research with a pre-test-post-test design was used. Five hundred adolescents were screened using the Need for Social Cognition Scale (NFSC). The Edinburgh Social Cognition Test (ESCoT) was used for pre- and post-assessment. A paired sample t-test shows Social Cognition after Yoga was significantly higher than the pre-test scores with a large effect size. The Wilcoxon Sign Ranked Test in the waitlist control group found that social cognition after yoga training does not significantly differ from the pre-test results. Yoga in a therapeutic setup can result in more positive outcomes when incorporated with psychotherapy as a non-pharmacological method, especially among adolescents with minor social-cognitive impairments, and it may result in diverse benefits to mitigate their social-cognitive dysfunction. The results help validate and promote Yoga to improve adolescents' social cognition.

Keywords: Yoga; Mental Health; Social Cognition; Indian Adolescents; Psychotherapy

Introduction

Adolescents in India intensively require mental health interventions and training on increasing cases of psychotic disorders concerning anxiety, depression, and social-cognitive impairments. Several official reports have proven that Indian adolescents aged 13 to 19 years show a prevalence of severe mental illness of 7.3 percent [1]. Adolescent social and cognitive impairments have become globally essential in public health discourses [2]. Social cognition can be explained as how adolescents perceive, store, and retrieve information about others. It may develop

from late childhood and peaks at the period of adolescence. Social cognitive impairment has a long course and acts as a precipitating cause for generating severe psychopathologies in the future lives of adolescents [3-5]. A low level of social cognition severely affects the social life of adolescents in several ways than described in the stated symptoms.

The current study focuses on low social cognition, an expressive symptom of several psychotic disorders, and seeking a remedy in Yoga. A typical yoga intervention can alleviate various ailments of adolescents regarding mental health and psychological well-being [6]. However, an inquiry

in this research area started about two decades ago, and very little literature is available on the Indian Adolescent population. Multiple benefits of yoga on social cognition have been found in the West, including improvement in overall social cognition performance [7]. There is an intensive need for a complete understanding of the role of Yoga on social cognition in adolescents. The existing studies suggest incorporating yoga techniques into routine activities can improve late adolescents' social functioning [8]. Moreover, imbibing yoga skills can complement other psychotherapies to enhance social cognition and mental health, contributing to a holistic approach to adolescents' social cognitive development and psychological well-being.

Yoga is an adaptable, cost-effective, and evidence-based model training that significantly fosters social cognitive skills by working on the theory of mind (cognitive and affective), recognition of social emotions, understanding social norms, inferences, abstract thinking, and planning abilities [9]. Yoga modifies physical and mental well-being to produce cognitive and affective changes, especially for individuals with severe social-cognitive deficits. It has been demonstrated to be helpful in the treatment of negative symptoms and in improving social-cognitive functioning and cognitive impairments in late adolescents. A discipline such as yoga may increase emotion regulation and mental abilities [10,11]. 'Yoga is a popular and comparatively inexpensive intervention in adolescents to address an increasing need for self-regulatory skills such as thinking, communication, and expression. Significant results have been reported regarding improved anger management and impulse control, as well as a decrease in negative emotions for students in a yoga intervention, implying that perhaps some regulatory processes are indeed being impacted by yoga' [12]. Yoga would thus have profound implications for protection and prevention from possible psychological and physiological discomforts among adolescents. It can be used for individuals in early, middle, and late adolescence in group or individual settings, including schools, colleges, rehabilitation centers, hospitals, etc. Furthermore, adolescents will learn to regulate the nervous system and neurological functioning of the body, providing physical, social, and cognitive fitness and psychological well-being.

Research Methodology

Participants

Around 500 adolescents from south India between the ages of 13 and 19 were screened using the Need for Social Cognition Scale (NFSC-29 items scale) [13]. Those with low scores on NFSC and who had signed consent for the training were selected for the final study. Thus, the sample for the definitive study included 80 adolescents with low social cognition (Table 1).

Gender	Frequency	Percent
Experimental Group		
Male	18	50
Female	18	50
Total	36	100
Waitlist Control Group		
Male	18	47.4
Female	20	52.6
Total	38	100

Table 1: Gender-wise Distribution of the Participants.

Inclusion criteria also look for those having low social cognition (below the average score obtained in NFSC). Participants' baseline features are presented in Table 1. Out of all 36 participants in the experimental group, 18 (50%) were male, and 18(50%) were female. 38 Participants were in the waitlist control group, and 18 (47.4%) were males and 20(52.6%) were females. They were placed into two groups, ensuring informed consent, approved by the institution's ethics committee, and consent obtained from participants and their parents.

Study Design

The quasi-experimental design with Pre-test and post-test methods are used in this study. Participants were assessed for social cognition before Yoga intervention and were placed into experimental and waitlist control groups. This one-week training entails several goal-oriented activities in each session, with a weekly schedule of 40 to 50 minutes daily. Yoga training in these sessions addresses social cognition, primarily cognitive and affective theory of mind, involved in social, mental, and emotional processing.

Assessment Tools

The material used for the pre-test and post-test for measuring social cognition is the Edinburgh Social Cognition Test (ESCoT) [14]. The Edinburgh Social Cognition Test (ESCoT) is a new test to assess social cognition in four domains: affective theory of mind, cognitive theory of mind, and inter and intrapersonal understanding of social norms. It uses ten animated interactions [14]. Generally, The Edinburgh Social Cognition Test (ESCoT) measures four social cognitive abilities related to social cognition: Cognitive theory of mind (ToM), Affective theory of mind (ToM), Interpersonal understanding of social norms, and Intrapersonal understanding of social norms. The ESCoT has 11 dynamic, cartoon-style social interactions, each approximately 30 seconds long. The ESCoT proves its inter-rater reliability using intra-class correlation assessment. There is a second independent rater score, a sample of 5 sample participants

from each age group. The consistency of ESCoT assessed (ICCs) for the 15 ratings is 0.90, indicating high inter-rater reliability. Guttman's Lambda 4 reliability coefficient calculates the assessment of internal consistency of the ESCoT, which is a better measure of internal consistency than Cronbach's alpha. The Guttman's Lambda 4 reliability coefficient for ESCoT is 0.70, an acceptable score.

Yoga Training Procedure

The participants are asked to sit on the yoga mat comfortably. Breathing exercise is given before the session begins. Light and comfortable cotton clothes are preferred to facilitate easy body movement. Practice sessions will begin with a prayer or invocation as it creates a conducive environment to relax the mind. Yogic practices will be performed slowly, in a relaxed manner, with awareness of the body and breath. Five postures will be adopted in this activity. Each of these postures takes 5-7 minutes. Each posture will be shown in the PowerPoint presentation [15]. Participants can refer to the exact postures. After completing each posture, there will be one-minute relaxation.

The participants are instructed to follow the trainer throughout the session. Those who feel uncomfortable have the freedom to quit the activity. There were five training sessions, and each session included five asana. They were:

(1) Virabhadrasana (2) Vrksasana (3) Utkatasana (4) Utkatasana (5) Adho Mukha Svanasana [16]. A 10-minute breathing exercise and a feedback evaluation followed each session. After completing the five sessions, participants were assessed to know the scores in social cognition.'

Data Analysis

This study provides descriptive statistics on the details of variables, followed by the tests for the normality of all the variables for both the experimental and control groups. A paired sample t-test was conducted for the variables with normal distribution to analyze the differences in effectiveness before and after training. Similarly, those variables that are not normally distributed were analyzed using the Wilcoxon Sign Ranked Test to obtain between-group effects. A paired sample t-test was conducted on the scores obtained by the experimental group, and the Wilcoxon Sign Ranked Test for the waitlist control group was used using the SPSS IBM 20 Version.

Results

Eighty participants were assigned into two groups. The participants in the experimental group received five days of yoga training, and the other group was waitlisted (Table 2).

Pairs	N	Mean	SD	Median	Paired Sample t-Test			Effect Size (r)
					Test Statistic (t)	df	p - value	
Psychological Well-being _ Before YOGA	36	131.8	16.19	129.5	-13	35	<.001	-2.17
Psychological Well-being _ After YOGA		187.9	23.17	191				

Table 2: Paired Sample t-Test – Social Cognition in Experimental Group.

The Paired Sample t-test result (table 2) found that for the adolescents in the experimental group ($N = 36$), the Social Cognition after Yoga training ($M = 102.0$, $SD = 3.76$) is

significantly higher than the Social Cognition before Yoga training ($M = 84.0$, $SD = 2.90$) with a large effect size, $t = -22.6$, $df = 35$, $p < .001$, $r = -3.77$.

Pairs	N	Mean	SD	Median	Wilcoxon Sign Ranked Test		Effect Size (r)
					Test Statistic (W)	p-value	
Social Cognition _ Before A-SCST Program	38	84.2	1.7	84	60.5	1	0.008
Social Cognition _ After A-SCST Program		84.2	1.84	84			

Table 3: Wilcoxon Sign Ranked Test on Social Cognition in Waitlist Control Group.

The Wilcoxon Sign Ranked Test in the waitlist control group result found that for the adolescents in the waitlist control group ($N = 38$), the Social Cognition after Yoga training ($M = 84.2$, $SD = 1.84$, $Mdn = 84.0$) does not significantly differ from the Social Cognition before ToM training ($M = 84.2$, $SD = 1.70$, $Mdn = 84.0$), $W = 60.5$, $p = 1.00$, $r = .008$. Hence, the results indicate that the Yoga training positively affects the Social

Cognition of adolescents in the experimental group.

Discussion

This study was conducted on a significant hypothesis that Yoga training positively impacts the overall social cognition of adolescents' development. As evidenced by the literature,

the results showed a significant difference between the experimental and waitlist control groups. The participants in the experimental group who received Yoga training showed significant improvement in social cognition higher than the participants who scored in the waitlist control group. The outcome indicates that Yoga skills training can improve social cognitive skills among adolescents. Structured training interventions for adolescents have been shown to bring about positive outcomes and improvement among those participating. There are minimal studies on adolescents incorporated with Yoga Skills training targets to improve their social cognition. These research findings set the ground for future studies focusing on adolescent social cognitive skills and mental health.

As evidenced by the results, there was an improvement in overall social cognition post-training program. This indicates that Yoga has a positive input on social cognition among adolescents. Adolescents are more likely to begin positive social interaction with peers after cognitive behavioural intervention; in particular, they improve social-cognitive skills and their ability to relate. They also learned to make relevant decisions and avoided non-social solutions [17]. Social cognitive abilities like cognitive theory of mind, affective theory of mind, interpersonal understanding of social norms, and intra-personal understanding of social norms are essential for successful adolescent interaction. Yoga training may prevent mental illness and reduce quality of life [18,19]. It has significantly decreased verbal aggression among adolescents [20]. Perspective-taking strategies develop in parallel with brain maturation, and training related to social cognitive abilities may increase these abilities later [21]. The use of Yoga skills training reduces the number of dropouts of treated adolescents with social phobia. They also exhibited increased training intervention effectiveness on social cognition [22]. The present study proves that Yoga practice will improve the overall social-cognitive abilities of adolescents in every aspect.

Limitations

Finding a feasible time for the training was not easy in a junior college setting.

Conclusion

Mental health issues among adolescents are increasing day by day in India. It will burden the development and management of future human resource utilization in Indian society. As this study depicts, typical Yoga skills training can effectively address the challenges due to low social cognition. This training can be provided early on with mild social-cognitive impairments. Thus, it may help to alleviate severe symptoms and prevent the onset of psychopathologies in the future. It

also can be used as an effective non-pharmacological method to increase social cognitive skills characterized by cognitive and affective theory of mind. However, studies related to social cognition in the Indian context are essential to gauge the impact of yoga on adolescents who have issues in social interaction and related functioning.

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