

Effect of Yoga among Children and Adolescents Diagnosed with Psychiatric Disorders: A Scoping Review

Abstract

Background: Depression has been expected to be the second-leading cause of disability, followed by autism, attention and hyperactivity disorder, and learning disorder. Yoga therapy has found to be beneficial in managing psychiatric disorders. **Aim:** The present study undertakes a scoping review of research on yoga therapy in psychiatric disorders among children and adolescents. **Methods:** Online database was used to identify papers published 2004–2023, from which we selected 11 publications from the United States, Canada, Iran, India, and Australia that used yoga therapy as a primary outcome variable among participants aged 3 years or older. **Results:** The papers reviewed were randomized controlled trials. All studies examined yoga therapy, but one study used mindfulness-based therapy and used few techniques of yoga therapy. The studies examined the effect of yoga therapy on early childhood and adolescence on various psychiatric symptoms such as stress, inattention, hyperactivity, anxiety, depression, and many more. **Conclusion:** While the quality of studies is generally high, research on yoga therapy among children and adolescents with psychiatric disorders would benefit from careful selection of methods and reference standards, suitability for yoga therapy, and prospective cohort studies linking early childhood exposures with yoga therapy outcomes throughout childhood and adolescence.

Keywords: *Deep breathing, meditation, mental illness, mood, relaxation, youth*

Introduction

Mental health problems constitute around 7.5% of the global burden of disease. It is a priority area of research as per the National Health Policy and National Mental Health Program of India.^[1] Depression has been expected to be the second-leading cause of disability by 2020, followed by autism, attention and hyperactivity disorder, and learning disorder. Poor mental health is associated with decreased school attendance, poor performance at school, use of drugs and alcohol, violence, and suicidal behavior. As child and adolescent problems have multifactorial (biopsychosocial) causation, multidisciplinary approach that includes both pharmacological and nonpharmacological interventions has been found to be clinically most useful.^[2] In recent times, various complementary and alternative medicines (CAMs) such as mindfulness and meditation intervention, acupuncture, nutraceuticals, and physical exercise have also gained interest with

encouraging results. One such CAM intervention is yoga. Yoga is a spiritual way of life that transcends all religions. Practitioners have recognized the benefits of the yoga lifestyle and positive effects on the mental faculties being the robust and most consistent. Yoga therapy has also been found to have beneficial effects on various psychiatric disorders.^[3] Practitioners have recognized the benefits of the yoga lifestyle and positive effects on the mental faculties being the robust and most consistent. Various studies are available on adult population about the effects of yoga in mental health. But very few studies are available in child and adolescents population in respect to effects of yoga and psychopathology. Moreover, what kind of techniques have been used with the child population and in which disorders are still unclear. For these reasons, a scoping review was conducted to systematically map the research done in this area, as well as to identify any existing gaps in knowledge.

Bichitra Nanda Patra,
Kanika Khandelwal,
Rajesh Sagar,
Gautam Sharma¹

*Departments of Psychiatry and
¹Cardiology, AIIMS, New Delhi,
India*

Address for correspondence:
Dr. Bichitra Nanda Patra,
Department of Psychiatry,
4th Floor, Academic Block, Room
No-4085, AIIMS, New Delhi,
India.
E-mail: patrab.aiims@gmail.com

Access this article online

Website: <https://journals.lww.com/IJOY>

DOI: 10.4103/ijoy.ijoy_227_23

Quick Response Code:



How to cite this article: Patra BN, Khandelwal K, Sagar R, Sharma G. Effect of yoga among children and adolescents diagnosed with psychiatric disorders: A scoping review. *Int J Yoga* 2024;17:3-9.

Submitted: 23-Nov-2023

Revised: 16-Jan-2024

Accepted: 15-Feb-2024

Published: 13-May-2024

This is an open access journal, and articles are distributed under the terms of the Creative Commons Attribution-NonCommercial-ShareAlike 4.0 License, which allows others to remix, tweak, and build upon the work non-commercially, as long as appropriate credit is given and the new creations are licensed under the identical terms.

For reprints contact: WKHLRPMedknow_reprints@wolterskluwer.com

Methods

Eligibility criteria

Original articles, empirical studies, randomized trials, yoga therapy alone or with combination, and psychiatric illness among children with/without comorbidity were the criteria for the inclusion of studies in the present review. Papers published between 2004–2023, written in English, involved human participants and described the nature of yoga therapy. Included studies were further analyzed by the independent researchers. Child and adolescent are defined as an individual between the ages of 1 year and 18 years. Psychiatric illness includes autism, attention-deficit/hyperactivity (ADHD), ID, learning disability of varying severity, frequency, duration, and comorbidity. Yoga therapy comprises yoga asana, relaxation exercises, warm exercises along with physical exercise, pharmacotherapy, and play therapy. Papers were excluded if they did not fit into the conceptual framework of the study, focused on psychotherapies, and pharmacotherapy.

Data source and search

The articles were searched from the year 2004 to January 2023 on MEDLINE, EMBASE, Cochrane, Scopus, and Science Direct. The search strategies were drafted by a senior researcher and further refined through team discussion. The articles found in the final search strategy can be found in additional file 1. The final search strategy was exported into endnote, and duplicates were removed by team members. Freely available articles were downloaded for review. The search was done using the following term “(adolescents) AND (yoga) OR (ADHD) OR (mental illness) OR (children) OR (depression) OR (anxiety)” were used to retrieve articles.

Research design and methods

Articles with the experimental group and/or control group and age <18 years were included in the review. Only studies with randomized controlled trials (RCTs) were included in the review. Studies with no RCTs, review studies, theoretical articles, case, and qualitative studies were excluded.

Selection of a source of evidence

To increase consistency among reviewers, all authors screened the same 11 publications, discussed the results, and amended the screening and data extraction manual before beginning the screening for this review. Two reviewers evaluated the titles, abstracts, and then full text of all publications identified by our searches for potentially relevant publications. We resolved disagreements on study selection and data extraction by consensus and discussion with other reviewers if needed.

Data charting process

A data charting form was jointly developed by two reviewers to determine which variables to extract. The two

reviewers independently charted the data, discussed the results, and continuously updated the data charting form in an iterative process.

Data items

We abstracted data on article characteristics, for example, country of origin, year of publication, type of research design, participant diagnosis, age range, type of intervention delivered, group or individual sessions, and outcome measures.

Results

Selection of sources of evidence

After duplicates were removed, a total of 38 citations were identified from searches of electronic databases. Based on the title and the abstracts, 27 articles were excluded, with 11 full-text articles to be retrieved and assessed for eligibility. The articles were excluded for the following reasons: 15 articles were not considered to be original quantitative research (e.g., no RCTs, review studies, theoretical articles, single case study, and qualitative study), 2 articles did not include children and adolescents with psychiatric disorder, and 5 articles have taken adolescents age range more than 18 years. The remaining 11 studies were considered eligible for this review [Figure 1].

Characteristics of sources of evidence

RCTs published from the year 2004 to 2014 had origins from Southeast Asia, the USA, and Australia. The total sample size was 476, with an age range of 3–18 years. The major psychiatric disorders included are anxiety, depression, somatization, ADHD, autism, and learning disability. The yoga therapy was delivered weekly, between 6 and 15 weeks, each session for 20–70 min in a group setting. The outcome measures were attention, hyperactivity, anxiety, sensation registration, seeking, and depression [Table 1].

Characteristics of individual sources of evidence

Yoga for depression

The study examined the acceptability and preliminary outcomes of a manualized yoga intervention for adolescents with a mean age of 15 years with co-occurring physical and psychiatric conditions in an academic medical setting. The majority of participants (83%) completed 6 or more classes and 32 participants (72%) completed the final assessments. Participants who completed the follow-up assessments did not differ significantly at baseline from those who consented to participate in the study but did not complete follow-up assessments (by gender, age, race, parent marital status, teen, or parent questionnaire reports). Participants who completed the follow-up measures reported significant decreases in perceived stress, improvements in anxiety, depression and somatization symptoms, decreased functional disability, and exhibited increased physical

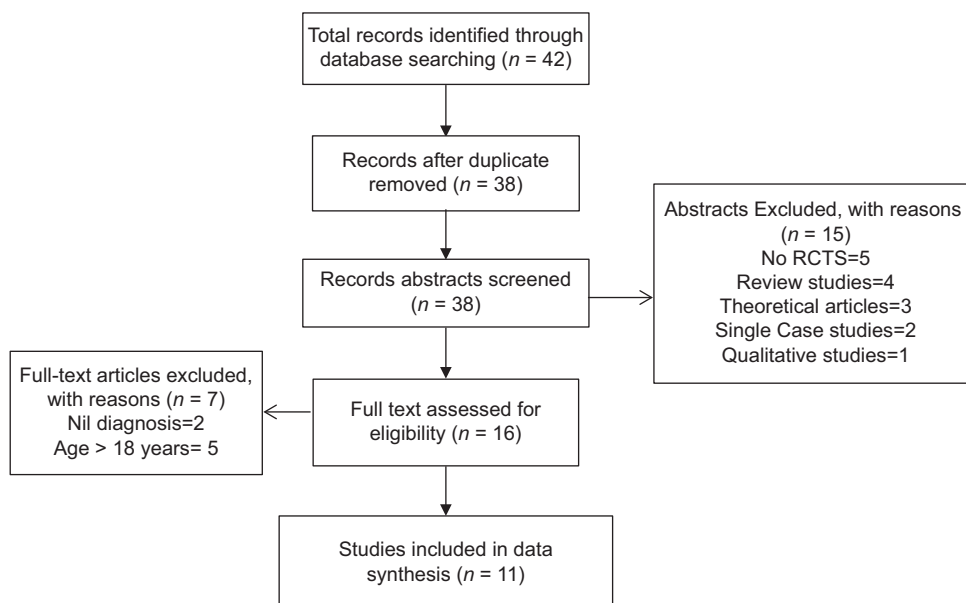


Figure 1: Selection of sources of evidence

fitness (6-min walk). A significant proportion shifted in their readiness to change “How I deal with stress” from “Contemplative” to “Action” stage. Parents reported improved child functional ability, improvement in anxiety, depression, and somatization symptoms. A manualized 8-week integrated yoga intervention for adolescents achieved clinically significant outcomes with moderately high adherence.^[4]

The effect of yoga as a sensory regulation tool in reducing adolescent distress in an acute care psychiatric hospital. The population consisted of a convenience sample of 75 adolescent mental health unit inpatients and partial-hospitalization patients 12–18 years of age who participated in two or more yoga sessions. Findings indicate that yoga sessions significantly improved patient pulse and self-reported distress ratings regardless of gender or sensory profile levels. It implies that research on the therapeutic effects of yoga as a sensory regulation intervention in the treatment of psychiatrically hospitalized adolescents. Yoga has the potential to help adolescents in an acute care psychiatric hospital learn to soothe themselves, regulate their emotions, and find relief from emotional distress while hospitalized.^[5]

Yoga for attention-deficit hyperactivity disorder

A total of 38 female children aged between 6 and 10 years participated in this study with a single group pre- and posttest design. The data analyses showed significant improvement in the attention level at both the Parent Assessment Scale and the Teacher Assessment Scale. This pre- and post-single group study suggests that 8 weeks of yoga practice gradually increases the attention level of orphan female children. Additional well-designed studies with larger samples and complex designs are recommended for generalization.^[6]

A randomized waitlist-controlled trial tested a 6-week yoga intervention in preschoolers with ≥ 4 ADHD symptoms on the ADHD Rating Scale-IV preschool version. Group 1 ($n = 12$) practiced yoga first and Group 2 ($n = 11$) practiced yoga second. The findings indicate that at baseline, there were no significant differences between Groups 1 and 2 on any measure. At T1, Group 1 had faster reaction times on the KiTAP (Test of Attentional Performance for Children) Go/No go task, fewer distractibility errors of omission, but more commission errors than Group 2. Children in Group 1 with more severe symptoms at baseline showed improvement at T1, which was not seen in Group 2 on parent-rated strengths and difficulties questionnaire hyperactivity-inattention and inattention on the ADHD Rating Scale. HRV measures did not differ between groups. It can be concluded that yoga was associated with modest improvements in an objective measure of attention (KiTAP) and selective improvements in parent ratings. Yoga may be a promising treatment for ADHD symptoms in preschoolers.^[7]

The effect of combined yoga and meditation with multimodal behavior therapy program for children aging 6-11 years found that. It was a 6-week program and results showed 90.5% of children improved as measured by their performance impairment score, a measurement of academic performance. Parent and teacher evaluations of behavior also found improvement as 25 of the 64 children (39.1%) improved into the normal range as measured by the Vanderbilt questionnaire. Moreover, children could successfully learn both yoga and meditation from high school students irrespective of their age, ADHD type, or initial performance impairment. The results demonstrate the efficacy of a multimodal behavioral program incorporating yoga and meditation. The use of high school volunteers

Table 1: Synthesis of results

First author and year	Country	n	Participant diagnosis	Age range (years)	Intervention	Group	Outcome measure
Marianne Z Wamboldt, 2019 ^[4]	USA	42	Anxiety, depression, or somatization	12–18	MBSR intervention Weekly 2.5 h sessions Yoga, relaxation, breathing, and meditation 8 closed groups of 4–8 participants each	Experimental group	Perceived Stress Scale Functional disability Inventory Behavioral Assessment Scale for children Somatization Anxiety Depression Readiness to change
Lavanyashree Indudhar, 2018 ^[6]	India	38	ADHD	6–10	Module developed by NIMHANS (Hariprasad VR <i>et al.</i> , 2013) 8 weeks 1 h daily for 5 days/week Yoga instructor Loosening exercise Yogic posture Yogic breathing	Experimental group	Inattentive Hyperactivity PH/IS combined ADHD combined ODDS CDS A/DS PIS
Samantha CL Cohen, 2018 ^[7]	USA	23	ADHD	3–5	School yoga – 30-min group yoga sessions were held twice a week, breathing exercises and poses Home yoga given a yoga DVD	Experimental and control group	SDQ parent rating SDQ teacher rating ADHD parent rating ADHD teacher rating Heart rate variability
Mohammad Saber Sotoodeh, 2017 ^[3]	Iran	29	Autism	7–15	8 weeks 30 min	Experimental and control group	Communication Sociability Sensory Health
Pamela Re, 2014 ^[5]	USA	75	Depression	12–18	50 min 2 sessions	Experimental	Low registration Sensation seeking Sensory sensitivity Sensation avoiding ADHD
Sanjiv Mehta, 2011 ^[8]	USA	80	ADHD	6–11	60 min 6 weeks	Experimental	
Pauline. S. Jensen, 2004 ^[9]	Australia	14	ADHD	8–13	20 weeks 60 min Weekly	Experimental and control group	CPRS
Lois J. Baron, 2005 ^[13]	Canada	3	Learning disability	8–14	10 weeks 60 min Twice weekly	Experimental	Hyperactivity Anxiety Mood
Andre Petsche, 2016 ^[10]	USA	4	ADHD	7–9	Twice weekly 30 min	Experimental	ADHD
Linda J. Harrison, 2004 ^[11]	Australia	48	ADHD	7–14	6 weeks Twice weekly 90 min	Experimental	ADHD
Zeynab Khanjani, 2016 ^[12]	Iran	120	ADHD	7–13	15 weeks Twice weekly 70 min	Experimental and control group	Correct answers Commission errors Omission errors

MBSR: Mindfulness-based stress reduction, ADHD: Attention-deficit/hyperactivity, SDQ: Strengths and Difficulties Questionnaire, CPRS: Conners Parent Rating Scale, CDS: Conduct Disorder Screen, NIMHANS: National Institute of Mental Health and Neuro Sciences, PIS: Predominantly Inattentive subtype, PH/IS: Predominately Hyperactive/Impulsive Subtype, ODDS: Oppositional-Defiant Disorder Screen, A/DS: Anxiety/Depression Screen

from schools in the area demonstrates an effective low-cost and universally applicable approach.^[8]

To studied boys diagnosed with ADHD by specialist pediatricians and stabilized on medication, randomly assigned to a 20-session yoga group ($n = 11$) or a control group (cooperative activities; $n = 8$). Boys were assessed pre- and postintervention on Conners parent Rating Scale (CPRS), the test of variables of attention (TOVA), and the motion logger actigraph. Results revealed significant improvements from pretest to posttest were found for the yoga but not for the control group on five subscales of CPRS, oppositional, global index emotional lability, global index total, global index restless/impulsive, and ADHD index. Significant improvements from pre- to posttest were found for the control group but not the yoga group on three CPRS subscales: hyperactivity, anxiety/shy, and social problems. Both groups improved significantly on CPRS perfectionism, diagnostic and statistical manual of mental disorder, fourth edition (DSM-IV) hyperactive/impulsive, and DSM-IV total. For the yoga group, positive change from pre- to posttest on Conner's Teacher Rating Scale (CTRS) was associated with the number of sessions attended on the DSM-IV hyperactive-impulsive subscale and with a trend on the DSM-IV inattentive subscale. Those in the yoga group who engaged in more home practice showed a significant improvement in TOVA response time variability with a trend on the ADHD score and greater improvements on the CTRS global emotional lability subscale. Results from the motion logger actigraph were inconclusive. Although these data do not provide strong support for the use of yoga for ADHD, partly because the study was underpowered, they do suggest that yoga may have merit as a complementary treatment for boys with ADHD already stabilized on medication, particularly for its evening effect when medication effects are absent. Yoga remains an investigational treatment, but this study supports further research into its possible uses for this population. These findings need to be replicated in larger groups with a more intensive supervised practice program.^[9]

The results found in studies that have examined yoga interventions delivered outside of school settings that aimed to improve ADHD-related variables showed improvement in ADHD symptoms such as inattentiveness and hyperactivity, as shown through parent reports.^[10]

To investigate meditation as a family treatment method for children with ADHD, using the techniques of Sahaja Yoga Meditation (SYM). Parents and children participated in a 6-week program of twice-weekly clinic sessions and regular meditation at home. Pre- and posttreatment assessments included parent ratings of children's ADHD symptoms, self-esteem, and child-parent relationship quality. Perceptions of the program were collected through parent questionnaires and child interviews. Results showed improvements in children's ADHD behavior,

self-esteem, and relationship quality. Children described benefits at home (better sleep patterns and less anxiety) and at school (more able to concentrate and less conflict). Parents reported feeling happier, less stressed, and more able to manage their child's behavior. Indications from this preliminary investigation are that SYM may offer families an effective management tool for family-oriented treatment of childhood ADHD.^[11]

To investigate the effects of yoga on sustained attention in three groups of children with syndrome ADHD, ADHD predominantly inattentive, and ADHD predominantly hyperactivity. The number of 120 students (7–13 years old) with symptoms of ADHD were selected by CTRS, and parent rating-children symptom inventory, in common both forms and were organized in two groups of yoga and control. Continuous performance test was done to evaluate sustained attention. The Yoga group was given a 30-session course on yoga training and control group, not. The results of this study indicate the efficiency of yoga in increasing sustained attention in all subgroups of children with symptoms of ADHD. Based on these findings, we concluded that Yoga can affect and help in attention improvement. Verification of such effects can be used to design effective nondrug therapies, such as the effect of yoga therapy on symptoms of ADHD.^[12]

Yoga for autism

To examine the effect of yoga training program (YTP) on the severity of autism in children with high-function autism (HFA). Twenty-nine children aged 7–15 years were randomly allocated to either yoga or control group. The participants in the yoga group received an 8-week (24 sessions) YTP. Parents or caregivers of participants completed an autism treatment evaluation checklist (ATEC) at baseline and the end of the intervention. The results of the analysis showed that there were significant differences between the two groups with regard to all ATEC subscore except ATEC I (speech/language/communication). This study provides support for the implementation of a YTP and identifies specific procedural enhancements to reduce the severity of symptoms in children with autism.^[12]

Yoga for learning disability

To examine the effects of 1 h, twice-weekly Tai Chi Chuan sessions on state anxiety and mood of children with severe learning disabilities. The participants were three upper elementary children. The intervention lasted 10 weeks. The state-trait anxiety inventory for children A-State Scale, a 28-item mood inventory, and CTRS-39, a scale used to assess whether a child has attention deficits and/or hyperactivity, were given at intervals during the pretreatment baseline (A1), treatment (B), and posttreatment baseline (A2). Results suggest that the intervention had the strongest effect on the participants who presented with hyperactivity and heightened anxiety. The findings support

the benefits of using a single-case research design with this population.^[13]

Discussion

To our knowledge, this is one of the first scoping reviews about psychiatric conditions among children and adolescents about the benefits of yoga. The studies focused on holistic intervention, including significant psychoeducation about stress, how the autonomic nervous system functions, and how yoga practices help move the balance toward parasympathetic control rather than sympathetic control. However, these studies did not separately evaluate the impact of this education. Moreover, the youth seemed to respond well to a fairly structured intervention that provided rationale as well as experiential learning.^[4]

The strength of the above studies is that they are randomized design. Moreover, by including parent and teacher reports of children's behavior, clinical assessments as well as qualitative data documenting the perceived changes and feasibility of the yoga intervention, contributed to a holistic measurement approach.^[7]

Along with yoga and meditation, the play therapy was used among school-aged peers to increase their motivation to participate in the yoga. The improvements seen from the program showed sustained effect in the long term, and it resulted in an effective and low-cost approach to address the needs of children with ADHD.^[8] Moreover, the use of yoga as a complementary treatment for boys with ADHD appears to have some merit, especially for its evening effect when medication effects wear off.^[9]

Some studies did not provide a control group. High adherence rate to yoga intervention was because of enough parental support for transportation to classes. In addition to the integrated and structured yoga practice, other components used in the intervention that may have been beneficial were not part of the analyses such as group support, active problem-solving, and positive bonding with an adult leader. These covariates were not analyzed separately.^[4]

In pilot and feasibility studies, a smaller sample size was used, and it impacted power calculations. Moreover, there was a short intervention period, missing data due to unreturned or incomplete rating scales, the inability of some children to complete self-reported measures, refusal of some children to wear equipment measuring physiological parameters, the change in location of school yoga between groups, and changes in teachers rating the participant's behavior. Many mindfulness and yoga interventions lack randomized assignment, statistical power, active control groups, and holistic measurement approaches.^[9]

Despite excellent results, some studies could not be generalized to inpatient or typically developed samples.

Moreover, pre/posttest design study, repeating testing may increase/decrease scores for participants as they anticipate questions from answers ahead of the time.^[7]

The opportunity to measure the effects of more than two yoga sessions was limited because patients were frequently discharged shortly after consent was obtained. It is a vulnerable population and in crisis at admission to the hospital. Therefore, consent forms were not presented to parents upon admission. Instead, a limited number of trained clinical staff obtained consent from parents and patients later in the patients' stay. Earlier consent would extend the capacity of this type of study to judge the effects of three or more yoga sessions. This study was limited to adolescents with English-speaking parents/guardians. We did not include adolescents of non-English-speaking parents/guardians because we could not be sure that they fully understood the consent and self-reported measures. All of the yoga classes were conducted by the same person. This provided standardized yoga instruction for all subjects in the study. However, it leaves the question of whether different yoga instructors would produce the same results. Moreover, the studies only measured the immediate effects of yoga. However, short-term effects are important in the psychiatric hospital setting, where stabilization is the goal.^[5]

Scheduling was also a limitation present in the study. Due to student and teacher absences, scheduled school days off, in-school assemblies, weekends, and the ever-present scheduling changes found in elementary school classrooms, observation and intervention periods could not be scheduled as regularly as the researchers would have preferred.^[10]

In parent-rated questionnaires and that the reported improvements in child outcomes and child-parent relationship might be ascribed to parents wanting to present themselves and their child in the best light. If this were the case, however, one would expect to see similar levels of change across the three parent-rated questionnaires, whereas results showed that improvements in ratings of self-esteem were independent of improvements in ADHD symptoms and relationship quality. This suggests that parents were not reporting a nondiscriminate or overly positive picture of their child but were giving an accurate report based on observed behavior.^[11]

For future studies, a large sample size to examine yoga benefits more, assessing the long-term versus acute effects of yoga, examining other relaxation strategies as compared to yoga can be studied.

Conclusion

Overall, yoga intervention showed significant results in children and adolescents diagnosed with psychiatric illness. Hence, the use of yoga as nonpharmacological intervention must be recommended by the clinicians.

Ethical statement

Ethical approval was not required for this study as it a scoping article where data was obtained retrospectively.

Financial support and sponsorship

Nil.

Conflicts of interest

There are no conflicts of interest.

References

1. Gururaj G, Varghese M, Benegal V, Rao GN, Pathak K, Singh LK and NMHS collaborators group. National Mental Health Survey of India 2015-16: Summary. Bengaluru, National Institute of Mental Health and Neuro Sciences, NIMHANS Publication No. 128, 2016.
2. Naveen GH, Varambally S, Thirthalli J, Rao M, Christopher R, Gangadhar BN. Serum cortisol and BDNF in patients with major depression-effect of yoga. *Int Rev Psychiatry* 2016; 28:273-8.
3. Sotoodeh MS, Arabameri E, Panahibakhsh M, Kheirodin F, Mirdozandeh H, Ghanizadeh A. Effectiveness of yoga training program on the severity of autism, *Complementary Therapies in Clinical Practice* 2017. doi: 10.1016/j.ctcp.2017.05.001.
4. Marianne Z W, Lisa C K-I, Michelle F, Patricia H. A Manualized Yoga Intervention for Adolescents with Co-Occurring Physical and Psychiatric Conditions Shows Improvements in Mental and Physical Health. *J Yoga and Physio* 2019; 6:555698.
5. Re P, McConnell JW, Reidinger G, Schweit R, Hendron A. Effects of yoga on patients in an adolescent mental health hospital and the relationship between those effects and the patients' sensory-processing patterns. *J Child Adolesc Psychiatr Nurs* 2014;27:175-82.
6. Indudhar L, Murthy S, Vijay Kumar BA, Venkatram R. Effect of yoga on attention level of orphan girls with ADHD. *Int J Adv Res* 2018;6:316-22.
7. Cohen SC, Harvey DJ, Shields RH, Shields GS, Rashedi RN, Tancredi DJ, *et al.* Effects of yoga on attention, impulsivity, and hyperactivity in preschool-aged children with attention-deficit hyperactivity disorder symptoms. *J Dev Behav Pediatr* 2018;39:200-9.
8. Mehta S, Mehta V, Mehta S, Shah D, Motiwala A, Vardhan J, *et al.* Multimodal Behavior Program for ADHD Incorporating Yoga and Implemented by High School Volunteers: A Pilot Study. *Int Sch Res Netwo* 2011.
9. Jensen PS and Kenny DT. The effects of yoga on the attention and behavior of boys with Attention-Deficit/hyperactivity Disorder. *J Atten Disord* 2004;7:205.
10. Petsche A. The Effect of Yoga on Attention in Students Diagnosed with ADHD. *Doctoral Dissertations* 2016;2016:1141.
11. Harrison LJ, Manocha R, Rubia K. Sahaja Yoga Meditation as a Family Treatment Programme for Children with Attention Deficit-Hyperactivity Disorder. *Clin Child Psychol and Psychiatry* 2004;9;200410:479-97.
12. Khanjani Z, Nazari MA, Karami A. Study on Effectiveness of Yoga Training on Sustain Attention in Sub-groups of ADD, HD and ADHD Children. *Psychology and Behavioral Sciences* 2016;5:77-82.
13. Barona LJ and Faubert C. The role of Tai Chi Chuan in reducing state anxiety and enhancing mood of children with special needs. *J Bodyw Mov Ther* 2005;9:120-33.