

**Original article**

**To what extent is mindfulness training effective in enhancing self-esteem, self-regulation and psychological well-being of school going early adolescents?**

Shruti Modi, Uma Joshi, Dinesh Narayanakurup

**Address for correspondence:** Director, Amity Institute of Behavioral and Allied Sciences, Amity University, Rajasthan. **Email:**umajoshi\_sk@yahoo.in

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**Abstract**

**Background:** Recent research has shifted the focus from treatments to the preventive measures in young age. The aim of this study is to assess the impact of mindfulness training on self-esteem, self-regulation, mindfulness and psychological wellbeing of school-going adolescents.

**Methods:** This is a matched controlled, pretest-posttest experimental study using school going 100 “early adolescents” (50 in experimental, and 50 in control group), in the age range 10-14 years. Adolescent Self-Regulatory Inventory, Rosenberg Self-esteem Scale, Ryff’s Psychological Well-being scale, and Child Adolescent Mindfulness Measure were used for assessments. The experimental group received weekly mindfulness training for ten sessions. Within and between group comparisons were done before and after the intervention using independent samples t test and paired t test.

**Results:** Mindfulness training was effective in bringing statistically significant improvement in all domains of self-regulation, psychological well-being, self-esteem and mindfulness. Moreover, the experimental group showed significant improvement in all domains compared to the control group from baseline scores to the post intervention assessment ( $p < 0.01$ ).

**Conclusion:** Mindfulness training is effective in fostering mindfulness and overall psychological development in early adolescence, including self-esteem, self-regulation, and psychological wellbeing. Mindfulness training should be considered at school levels because of its preventive and cost-effective nature, helping students become empathizing and socially mature adults.

**Keywords:** Mindfulness, Adolescence, Meditation, Positive psychology, wellbeing

## **Introduction**

Research with adolescents over the last decade has stretched out the focus from treating of problems to considering protecting features of psychological functioning by the use of early and preventive approaches [1]. Mindfulness can be considered to be the basis and pre-requisite for education. Practicing mindfulness can boost abilities targeted by modern education such as self-regulation, empathy, problem solving skills and open-mindedness. It prepares children to face future challenges and become smart, compassionate, and dedicated citizens [2].

UNICEF has defined the age group of 10 to 14 years, as 'Early adolescence' as more and more adolescents are hitting puberty early [3]. Education is increasingly looked at as capable to help address problems that are global in nature (social, political, economic, etc.) by supporting children to cultivate traits such as a sense of selflessness, empathy, kindness and connectedness [4]. Delivering mindfulness interventions in schools could be considered, because in school, education as well as prevention can happen at the same time, while targeting different requirements and unfulfilled capacities of students.

Mindfulness is being aware about the present moment, and being open and keen to know what is happening inside and around oneself [5]. Research has developed rapidly in the last thirty years and reviews conclude that mindfulness interventions are promising, generally acceptable and

well-liked by the young people who take part, and there have been no reports that any of them did any harm [2,6-9]. Reviews also indicate that most research on mindfulness with the young has mainly been conducted in clinical population [6,7] and lesser in non- clinical populations [2,10,11].

According to a recent study, only 8 % of all studies using mindfulness have involved young children below the age of 18, and only 1% of all studies focused on youth in school settings. Research using mindfulness is usually called as being in its infancy. If this were true, we could say that research using mindfulness with school going early adolescents is in the prenatal stage of development [12]. Schools have a distinctive spot in backing up students' mental health because services at school are exceptionally accessible, and can be an excellent cost-effective option as compared to support from a clinic or hospital [13].

Most mindfulness training programs for the young that exist currently are based on the Western culture, which warrants careful consideration if they have to be implemented in other cultures, like India [14]. Only little research has been published so far using mindfulness interventions in non-clinical sample from an Indian school setting [10,15,16]. They showed improvements in academic self-concept, cognitive functions and well-being of school going adolescents. They also found significant reductions in physiological and emotional manifestations of stress, academic stress, and stress due to peer interactions [10,15,16].

This study was designed keeping in mind the notion of positive psychology, so rather than focusing on reduction of negative attributes like negative emotions or symptoms in clinical population; it focusses on enhancing attributes of psychological wellbeing, self-regulation and self-esteem. The authors also believe that if we want to effectively engage early adolescents in mindfulness practice, the techniques used to teach them must be creative. Debra Burdick, in her

book has given various tools and activities that can be used in teaching mindfulness skills to kids and teens [17]. The present study integrated activities from this book along with core MBSR activities to make it more interesting for the participant. Results from this study will help to assess feasibility and effectiveness of using mindfulness- based interventions in an Indian school setting. The aim of the present study is to assess the effect of mindfulness- based intervention on psychological well-being, mindfulness, self-esteem and self-regulation among school going adolescents.

## **Methods**

The present study was conducted in an International school setting from a semi-urban background in Rajasthan (English medium). After explaining the school administration about the intervention, a written permission was taken from the school to conduct the program. This school was chosen because the trainer of the intervention held a regular position at school- school counselor. The contents of the intervention program and activities for each session were finalized and opinions from three experts regarding the appropriateness of the intervention were taken. After incorporating the suggestions, the Institutional Ethical clearance was procured. A written informed consent from the parents of the adolescents, and a written assent was taken from the participants. Participants were given a right to withdraw from the study at any point they want and were assured confidentiality. Before conducting the main study, a pilot study was conducted on 20 students to check the acceptability and feasibility of the techniques used in the intervention. After going through the feedback and making changes where required, this study was conducted. Participants in the pilot study accepted the intervention with interest, and there were no drop-outs. Feedback was taken for activities on a daily basis. The participants could

easily comprehend the items in the questionnaires and the scripts used in meditation and other activities. The intervention was effective in bringing about statistically significant changes in scores of self-esteem, self-regulation, mindfulness and psychological wellbeing.

*Design:* Matched controlled, pre-test post-test intervention study design was used in this study with 100 students. The experimental group was trained in mindfulness intervention on a weekly basis for ten weeks. The control group did not receive any training, and participated only in assessments pre and post the duration of intervention.

*Outcome variables:* self-regulation (sum, short term and long term), self-esteem, psychological well-being (total, autonomy, environmental mastery, personal growth, positive relations with others, purpose in life and self-acceptance), and mindfulness.

*Sample:* 100 students (50 in experimental group, 50 in control group) from middle school (classes 5 to 8) age ranging from 10 to 14 years ( $12.00 \pm 1.42$ ), who could read, write and speak English, were taken from a single school, and who could pass the screening of inclusion- exclusion criteria were a part of this study. The sample included 50 males and 50 females, equally distributed in both groups. Individuals who had physical disability, history of diagnosis of psychiatric or neurological disorder, practiced yoga, meditation or any other relaxation regularly for at least last six weeks before the screening visit, or those who received any form of psychotherapy in last two years were excluded from the study.

*Procedure:* Participants were screened on the basis of criteria mentioned, and the selected participants were matched based on age, gender, academic achievement, and then randomly allocated using toss of a coin to experimental or control group. This method was used to control the confounding effect of variables and minimize the researcher's bias.

The experimental group consisted of five subgroups, formed at various time points with nine to eleven participants per group, and received 40 minutes weekly sessions of mindfulness training for ten weeks, and adolescents who had attended at least eight out of ten sessions were considered as ‘completers’. The control group was given free time to either read in library, complete their work or self-study. Both the groups were tested before and after the intervention.

## **Materials**

After screening (based on the questions answered by parents on the “Personal data record form”, the following forms and tests were used for participants in both groups. The testing took approximately 45 minutes per participant. The testing was done on group basis within a period of a week before or after the intervention. The details are briefly mentioned below.

1. Personal Data Record form: created by the researcher to record demographic details that can be used in matching the participants, educational history and any history of diagnosed physical, psychiatric or neurological problems and past exposure to psychological therapy, or regular practice of yoga. This was to be filled by the parents of the participants.
2. Adolescent Self-Regulatory Inventory (ASRI) [18]: It is a 36 items self-report questionnaire that measures both short term and long- term self-regulation. It uses a 5-point Likert scale, ranging from “Not at all true for me” to “Really true for me”. Higher the scores, better the self-regulation. The scale is widely used in research and has satisfactory psychometric properties. The internal consistency of the long-term and short-term factors as well as concurrent and construct validity are satisfactory. The ASRI has also demonstrated good incremental validity [18].

3. Rosenberg Self-esteem Scale [19]: A uni-dimensional widely used 10-item self-report scale measuring global self-worth by measuring both positive and negative feelings about the self. All items are answered using a 4-point Likert scale format ranging from strongly agree to strongly disagree. Higher scores indicate better self-esteem. Test-retest reliability correlations range from .82 to .88, and Internal Consistency (Cronbach's  $\alpha$ ) range from 0.77 to 0.88 [19].
4. Ryff's Psychological Well-being scale [20]: It is a 42 item self-report measure of psychological well-being. Each dimensions of PWB deals with different challenges individuals face in an effort to function optimally. The PWB scale incorporates six dimensions: autonomy, positive relations with others, environmental mastery, personal growth, purpose in life and self-acceptance. Self-Acceptance refers to feeling positive about oneself and the past, even when one is aware of his or her own shortcomings. Positive Relations with Others centres on developing and maintaining warm, satisfying and trusting interpersonal relationships. Environmental Mastery involves a sense of mastery and competence in managing the environment so as to meet personal needs, desires, and values. Autonomy is defined as a sense of self-determination and being able to resist social pressure to think and behave in certain ways. Purpose in Life refers to a sense of meaning of life and directedness. Lastly, Personal Growth centres on a sense of improvement and development in self over time, and making the most of one's talent and capacities [20]. The reliabilities (Cronbach's  $\alpha$ ) range from .61 to .88. The correlations among six dimensions range from -.38 to .58.
5. Child Adolescent Mindfulness Measure (CAMM) [21]: it is a 10 item self-report measure for children that assesses the extent to which they behave with mindfulness, accept and

witness their internal experiences non-judgementally and without avoiding. Participants respond based on how much they agree with the item reflecting over their experience in the past two weeks. (e.g., ‘I think about things that have happened in the past instead of thinking about the things happening right now’). It uses a six point Likert scale ranging from never true to always true. The scores are reversed and totalled, and then higher scores mean higher mindfulness. The scale has good concurrent validity and internal consistency. It has shown small to moderate inverse correlations with somatic complaints, mental inflexibility and thought suppression (Cronbach’s  $\alpha = 0.87$ ) in earlier research [17].

### *Intervention*

The program involved developing an understanding, practicing and training in different variants of mindfulness meditation, like mindful sitting, mindful eating, mindful walking, mindful listening, and body scan, in a group format. The sessions were carried out by a trained and licensed clinical psychologist who is a practitioner of mindfulness. The study used activities as suggested by Burdick in her book [17] (after due permission from the author) to teach the concept of mindfulness, and integrated them with formal practices in the sessions and at home. These sessions were finalized after incorporating the suggestions by experts in the field.

The sessions mainly included formal and informal practices along with homework related to introduction to mindfulness, breathing awareness meditation, sitting meditation, body scan, mindful eating, mindful motions, mindfulness of emotions, mindfulness in relationships, mindfulness of tasks, and loving kindness meditation.

Every session consisted of meditation exercises, which was dedicated to either mindfulness of breathing, body parts or thoughts. Initially, the mindfulness meditation activities were projected

to participants as activities or games that were meant to help awareness of the different aspects of the self, associated with breath, thoughts and body. Tools or mental images were sometimes used to carry out these activities.

For example a paper boat on the belly was used to improve the focus and observe the breath while making it interesting; imagining thoughts as soap bubbles, or clouds was helpful in teaching and experiencing the short-lived and transient style of thoughts. An experiment was conducted using glitter in a transparent bottle filled with water and it was explained that if the bottle is shaken and glitter keeps moving, the water turns milky; and how the same analogy works with thoughts in the mind. During the body exercises, meditation in movement while walking was used whereby they were asked to mindfully explore their body while they were walking on different textures like floor, sand or grass. In each activity, they were instructed to quietly bring attention back to the present activity if their mind had wandered, non-judgmentally. After each activity there was a debriefing phase in which trainers explained the exercise for next session briefly and participants could share their mental state, experience, feelings, doubts and problems about the activity that was just completed. Formal and informal homework assignments were given.

### *Statistical Analysis*

Statistical Package for Social Sciences, Version 16.0 for Windows (SPSS 16.0) was used to quantitatively analyze the data. The confidence level was set to 0.05 to interpret the significance of results in the present study. Independent sample *t*-test was used for baseline and post intervention comparison on outcome measures for both groups. Paired sample *t*-test was used to compare baseline and post-intervention means on outcome measures within each group. Data on

compliance with practice of meditation at home were collected every week during the intervention.

## Results

Participants who were a part of the sample were aged 10-14 years, studying in grades V to VIII.

The study was a matched control study, hence there was no difference in terms of age and gender between the experimental and control group. There were no dropouts in the study.

Table-1 shows that both groups were comparable in terms of the outcome measures (self-esteem, self-regulation, psychological wellbeing and mindfulness), as there is no statistically significant difference between groups at baseline in the scores of any outcome measures. The highlighted variables in the tables indicate the total score as a main variable (the ones that are not highlighted are the sub-components).

**Table- 1: Mean differences between experimental group and control group on outcome variables at baseline (pre intervention) using independent samples t test**

Variables	Experimental group (n=50)		Control group (n=50)		t (df=98)	F
	Mean	S.D.	Mean	S.D.		
Sum Self Regulation	94.80	12.20	95.06	10.68	-0.113	0.910
Short term Self regulation	44.44	6.13	44.06	6.05	0.312	0.756
Long term Self regulation	51.38	6.04	51.00	5.78	0.321	0.749
Self Esteem	23.76	3.88	23.88	3.06	-0.172	0.864
Psychological Well-being	171.66	12.72	172.74	10.85	-0.457	0.649
Autonomy	26.86	3.82	26.72	3.58	0.189	0.850
Environmental Mastery	29.04	3.60	29.32	2.99	-0.423	0.673
Personal Growth	29.24	2.70	29.72	3.04	-0.834	0.406
Positive Relations with others	29.22	3.49	29.36	2.80	-0.221	0.825
Purpose in life	28.92	3.00	28.78	2.35	0.260	0.796
Self-Acceptance	28.38	3.14	28.84	3.40	-0.703	0.484
Mindfulness	19.50	3.66	19.84	2.35	-0.553	0.582

Table-2 shows that there was a significant difference between the groups (experimental and control) on different psychological measures at post-intervention assessment. Experimental group scored significantly higher in all dimensions of self-regulation ( $t = 6.983$ , for sum self-regulation,  $t = 5.243$  for short term self-regulation,  $t = 5.405$  for long term self regulation,  $p < 0.001$  in all cases), self-esteem ( $t = 6.054$ ,  $p < 0.001$ ), psychological well-being ( $t = 17.487$ ,  $p < 0.001$  for overall psychological well-being, see table 2 for sub scales) and mindfulness ( $t = 16.539$ ,  $p < 0.001$ ) as compared to the control group.

**Table 2: Mean differences between experimental group and control group on outcome measures post intervention using independent samples t test**

Variables	Experimental group (n=50)		Control group (n=50)		t (df=98)	P
	Mean	S.D.	Mean	S.D.		
Sum Self Regulation	107.54	9.06	94.60	9.47	6.983	<0.001
Short term Self regulation	49.48	4.90	44.38	44.83	5.243	<0.001
Long term Self regulation	58.06	6.78	51.18	5.92	5.405	<0.001
Self Esteem	28.22	3.98	24.00	2.91	6.054	<0.001
Psychological Well-being	208.28	10.63	171.54	10.38	17.487	<0.001
Autonomy	33.78	3.62	26.54	3.12	10.713	<0.001
Environmental Mastery	34.40	3.69	29.20	3.36	7.375	<0.001
Personal Growth	36.78	3.06	29.680	2.77	12.173	<0.001
Positive Relations with others	32.68	3.52	29.10	2.67	5.733	<0.001
Purpose in life	34.06	3.13	28.72	2.51	9.411	<0.001
Self-Acceptance	36.58	2.69	28.88	2.61	14.536	<0.001
Mindfulness	28.18	2.72	19.92	2.26	16.539	<0.001

Table-3 shows the scores of experimental group on different outcome measures before and after the intervention. Results show that there was a significant improvement in the scores of all variables ( $p < 0.001$ ).

**Table-3: Mean differences within scores of experimental group pre and post intervention in outcome variables, using paired t test**

Variables	Pre intervention (n=50)		Post intervention (n=50)		t (df=49)	P
	Mean	S.D.	Mean	S.D.		
Sum Self Regulation	94.80	12.2	107.54	9.06	-9.492	<0.001
Short term Self regulation	44.44	6.13	49.48	4.90	-9.350	<0.001
Long term Self regulation	51.38	6.04	58.06	6.78	-12.525	<0.001
Self Esteem	23.76	3.88	28.22	3.98	-11.759	<0.001
Psychological Well-being	171.66	12.72	202.28	10.63	-30.228	<0.001
Autonomy	26.86	3.82	33.78	3.62	-17.532	<0.001
Environmental Mastery	29.04	3.60	34.40	3.69	-11.465	<0.001
Personal Growth	29.24	2.70	36.78	3.06	-19.497	<0.001
Positive Relations with others	29.22	3.49	32.68	3.52	-7.234	<0.001
Purpose in life	28.92	3.00	34.06	3.13	-12.785	<0.001
Self-Acceptance	28.38	3.14	36.58	2.69	-24.170	<0.001
Mindfulness	19.50	3.66	28.18	2.72	-18.825	<0.001

**Table-4: Mean differences within pre and post intervention scores on outcome measures of control group, using paired t test**

Variables	Pre intervention (n=50)		Post intervention (n=50)		t (df=49)	P
	Mean	S.D	Mean	S.D		
Sum Self Regulation	95.06	10.68	94.60	9.47	0.835	0.408
Short term Self regulation	44.06	6.05	44.380	4.83	-.722	0.474
Long term Self regulation	51.00	5.78	51.18	5.92	-0.423	0.674
Self Esteem	23.88	3.06	24.00	2.91	-0.398	0.693
Psychological Well-being	172.74	10.85	171.54	10.38	1.765	0.084
Autonomy	26.72	3.58	26.54	3.12	0.596	0.554
Environmental Mastery	29.32	2.99	29.20	3.36	0.347	0.730
Personal Growth	29.72	3.04	29.68	2.77	0.137	0.891
Positive Relations with others	29.36	2.80	29.10	2.67	0.945	0.350
Purpose in life	28.78	2.35	28.72	2.51	0.266	0.791
Self-Acceptance	28.84	3.40	28.88	2.61	-0.158	0.875
Mindfulness	19.84	2.35	19.92	2.26	-0.272	0.787

Table-4 shows the scores of control group on different outcome measures before and after the intervention. Results show that there was no significant difference in the means of any variables.

## **Discussion**

This study made a matched controlled pre-test post-test comparison of experimental group (trained in mindfulness) and control group on self-esteem, self-regulation, psychological wellbeing and mindfulness of adolescents.

It was found that that there was no significant difference on self-esteem, self-regulation, psychological wellbeing and mindfulness between the experimental and control group at baseline (refer to table 1). Because there was no equal therapist contact between the therapist and participants in both groups, we cannot be sure that the results are because of the intervention alone. However, because it is a matched control group design, the confounding effect of age, gender and time was controlled, and the results hold a promise that the intervention could be effective in bringing significant changes in the experimental group. Hence, we can assume that whatever differences are found post intervention could be attributed to the mindfulness intervention, as both groups were matched and analysis reveals that they are comparable at baseline. A significant difference was found between experimental and control group in self-esteem, self-regulation, psychological wellbeing and mindfulness post intervention (refer to table 2). Analysis of results using paired t test reveals that experimental group showed significant improvement in self-esteem; self-regulation, psychological wellbeing and mindfulness post intervention as compared to the baseline measures (refer to table 3). There was no significant difference in the pre and post scores of outcome variables within the control group (refer table 4). Therefore, the results indicate that mindfulness practice is beneficial in adolescence, and is

capable to bring about important changes in the psychological functioning of adolescents. However, a sham intervention may be more effective in proving that the changes are because of the intervention alone.

Self-regulation assists goal directed behavior and the ability to respond effectively to situations that are demanding emotionally and cognitively, by effective regulation of thoughts, behaviors and feelings. Our study shows that mindfulness led to an improvement in scores of self-regulation, which is in accordance with earlier findings [22]. In a recent review on mindfulness intervention with adolescents, the authors tried to explain through a model, a theoretical mechanism of action in this population [23].

They concluded that being instructed in mindfulness enhances the psychological and cognitive functioning as well as improving the coping processes used. This further enhances the self-regulation among adolescents. Psychological functioning is enhanced by practicing mindfulness because it leads to an increase in self-awareness and reductions in anxiety, immediate reactivity when angry, and difficulties with handling emotions. Coping processes are improved because of reduction in ruminating and engaging in adaptive coping. All these in turn together, could lead to increases in self-regulation [23]. The improvement in self-regulation in the present study could be explained by such possible mechanism. However, this finding is only based on adolescent's self-report. Getting a report from the stakeholders, like parents and teachers would increase the validity of this result.

Our results show improvements of scores in all domains of psychological well-being- including autonomy, positive relations with others, environmental mastery, personal growth, purpose in life and self-acceptance. These findings are supported with earlier studies as well [24]. It is pertinent to focus on increases in the sub-scales because adolescence is the time when the

individual is developing his or her own identity, and faces identity related crisis; and if mindfulness can enhance his or her personal growth, mastery over the environment, accepting self, better relations with others, increasing autonomy as well as making one think about purpose in life, this could prevent a lot of crisis that adolescents are prone to face, and instead improve the mental health by increasing the overall psychological well-being.

Results also show an improvement in self-esteem of the adolescents who attended mindfulness intervention. Brown and his colleagues suggest that mindfulness training lets the practitioner surpass the cognitive biases that individuals hold against themselves and as a replacement focus on the non-judgmental awareness in the present moment without letting the mind being inclined to these self-critical schemas, and hence acting as a buffer against poor self-esteem [25]. The core principles of mindfulness like being non-judgmental, open and non-reactive will enhance one's self esteem, and when the adolescent masters the mindfulness training, these principles become a part of his responding to evaluations of oneself (self-esteem) as well as that of others [25,26].

There is mixed evidence as to whether mindfulness training improves the self-rated scores on mindfulness [27]. Different studies have used different scales, and hence the findings have to be interpreted with caution. Our results show that mindfulness training increases self-rated mindfulness on CAMM, which can be supported by earlier findings; e.g. study on 174 individuals using MBSR concluded that higher the amount of time spent on mindfulness practice, better are the changes in self-rated mindfulness [28].

The adolescents reported enjoying the activities and few reported feeling amazed that meditation can be interesting. Probably, tailoring the intervention to suit the needs of this developmental age proved to be useful in the present study. The activities, though short were effective, and indicate

that shorter versions of mindfulness sessions (as opposed to the long sessions in standard MBSR) are accepted better. It is important to keep in mind while designing an intervention that attention spans of adolescents are shorter than that of adults. Starting with shorter meditations and gradually building up helped the participants believe that these exercises are doable and they did not lose interest. Overall, the intervention was found to be feasible and acceptable, as reflected by high retention rates and the positive feedback received from the participants. Results of the study are promising and suggest that it can be implemented.

The current study was a structured group program which was tailored for adolescents and is among the first matched controlled trials providing initial evidence for the effectiveness of mindfulness within the Indian school setting. The strength of the present study is that it was a matched control pre-post design, which helped in controlling the confounding effects of age and intelligence, and increased the validity of the study.

Limitations include no follow-up study to assess the sustainability of the improved outcome measures and the need for booster sessions. Follow-ups are important to see the sustainability of the results. Further, the results though highly significant and promising, are only from one school, and hence cannot be generalized to the population. An active control group using the same therapist is recommended for further studies, to reduce the “therapist effect”. The results are from self-report data, and hence, may further be confirmed by alternate ways; parent or teacher ratings could have been complemented wherever possible to get the objective reports. The therapist who conducted the intervention was a regular employee of the school, which could have augmented the results. The study focused only on enhancing the positive states, and did not study the effect on negative states like stress, anxiety and depression. It would have been interesting and important to see the mediating relationship between these variables.

To conclude, results from the present study and those in the earlier studies, support the conclusion that mindfulness interventions are an effective approach in fostering overall psychological development in adolescence, especially self-esteem, self-regulation, and psychological wellbeing. The participants reported enjoying being a part of the intervention. Thus, this training program is a potentially powerful intervention for clinicians working with adolescents, and with school fraternity in general.

Recent research with young population is exploring the possible pathways that may act as buffer or protecting features against challenges that adolescents face, in general. Inclusion of mindfulness training could be considered in schools because it will help them in protecting as well as promoting health, while engaging in mutually enriching relations and becoming empathizing and socially mature adults. However, more studies with robust methodologies are needed for stronger conclusions.

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Shruti Modi, Clinical Psychologist, Department of Psychiatry, All India Institute of Medical Sciences, Jodhpur, Rajasthan; Uma Joshi, Director, Amity Institute of Behavioral and Allied Sciences (AIBAS), Amity University Rajasthan, Jaipur; Dinesh Narayanakurup, Associate professor, Department of Clinical Psychology, School of Allied health Sciences (SOAHS), Manipal Academy of Higher Education, Manipal.