

CHAPTER 7

APPRAISAL

7.1. Summary

The effect of a long-term intensive yoga program on eye to eye gaze, sitting tolerance, body posture and balance, imitation skills, self-stimulatory and self-injurious behaviors and receptive skills related to spatial relationships was studied in two groups of ASD children (yoga and non-yoga). It was a control study in a school setup in Bangalore, South India. Twelve subjects (n = 12) with ASD, whose parents consented to participate in the study were assigned to two groups to receive yoga or no yoga. The intervention consisted of a twenty-months intensive yoga program comprising of warm-up practices , loosening practices, strengthening asanas, calming asanas, yogic Breathing practices and chanting. The non-yoga group received traditional ABA based training in a special school. In the yoga group there was significant improvement in the mid session (200th session) followed further by a significant improvement in most of the parameter by the end of yoga intervention (390th session). There was no significant change in any of the parameters in the non-yoga group.

Uniqueness of the study: This is a first comprehensive intensive scientific study conducted with ASD children along with their parents compared to reports which showed better results in changing the ASD behavior. Duration of yoga practices in the present study was 1 hour per day for five days. The integrated yoga module used in this study included mind management techniques like OM meditation, cyclic meditation, deep relaxation technique, mind sound resonance technique, yogic hymns, yogic counseling and devotional sessions to the parents of the ASD children who participated in the study.

7.2. Conclusion

1. Improvement in autistic behavior of ASD children after the practice of yoga resulting in better quality of life for parents.
2. Increase in imitation behavior

3. Decreased repetitive stereotyped behavior

Overall, this study revealed significant positive changes in overall participant scores in all the ASD behaviors. It is difficult to say with any certainty that changes in ASD symptoms were due to the yoga intervention only. Yoga allows for simple asanas to be used in class as part of the curriculum. However, the benefits of yoga are that it not only uses simple asanas as a way to release excess energy, but it also teaches participants how to focus their energy and concentration through deep breathing and relaxation techniques. Further, research has shown that meditative deep breathing exercises have a calming and focusing effect and relaxation exercises have shown positive effects on reduced hyperactivity, increased imitation and decreased repetitive stereo typed behavior.

7.3. Strength of the study

This was a long-term, twenty month study without any drop out in either control group or the experimental group. Data were also taken at the mid-point. Furthermore, to the author's knowledge, this is the first behavioral study in ASD children with a control group. Study design also included parental participation; such a family oriented treatment has not previously been reported in any conventional intervention modules. Finally, the consistency of the results enabled statistical significance to hold.

7.4. Limitation of the study

Despite the overall positive results of using yoga in the classroom, there are certain issues to consider, particularly methodological issues. The sample size, though extremely small, was homogenous with respect to age and gender. The participants themselves had different characteristics with reference to ASD behavior; I.Q. and learning capability. There were also variations in the number of yoga sessions attended and the amount of time each participant received. Yoga intervention varied from 30 to 45 minutes, depending on the participant's motivation to continue.

Autism Rating Scale, ITB, RSBTB and Teacher- parent Rating Scales used in this study are subjective. Given that both the teachers and parents knew the questions guiding the study, it may have been difficult to be as objective as possible when completing the test battery. Further, because different teachers gave inputs for the pre-, mid- and post-rating, different teachers might have had different perceptions regarding the behavior and severity of behavior, in spite of the initial training of these teachers by the researcher. As a result, the scores could have been affected by inter rater reliability. In future studies, inter and intra rater reliability could be incorporated. Another variable was the parent questionnaire. It was discovered that most of the parents did not have significant knowledge of the participant's reason for being in a special education classroom and in one instance; a parent did not have the ability to answer specific questions due to inadequate knowledge about ASD. Thus, teachers and parents used other information from academic records to complete missing pieces of the questionnaire. Some medical information was not disclosed in school records – as medication, or changes in medication, were not mentioned. Because of the variations in information gathered from many schools, miscommunications could have occurred between among parents, teachers, administrators, and medical professionals, resulting in incomplete student records.

The use of yoga as a complementary, as opposed to alternative, treatment for students with ASD appears to have some merit in the classroom. In order to have the opportunity to discover more about yoga intervention in the classroom, there are several opportunities for future exploration and study. First and foremost, it would be beneficial for the research to be continued for a longer time and collect data using rating scales periodically in order to determine any progressive benefits of the yoga intervention. This study needs to be replicated with larger numbers and more reliable measures need to be employed. Because of the success of the summed participant data, the yoga intervention should be replicated in a classroom for students in a special education setting.

7.5. Suggestions for future

- Standardize and validate the test battery (ITB and RSBTB) modified by the researcher for the Indian populations
- Continued use of the research methodology for an extended time period
- More controlled time intervals for yoga intervention
- Use of more reliable measures such as an outside observer recording data at specific intervals to record targeted behaviors
- Gather parental input regarding the effects of the yoga intervention after school to determine generalization effects

This area of research is extremely promising and could result in an effective way to help all ASD students to increase their communication skill. Many people have tried to explain the benefits of yoga, but few actually have data to back up anecdotal evidence.