

**Benefits of Yoga Education in High School Curriculum for
Anger Management: A Randomized Control Study**

SECTION – 3

LITERATURE REVIEW

**(STUDY OF SCIENTIFIC LITERATURE /
PUBLISHED PAPERS)**



SECTION 3 : REVIEW OF SCIENTIFIC LITERATURE

This study of scientific literature is aimed to understand the concept of anger from the behavioural science perspective through published scientific literature. And also to study literature of yoga in schools and yoga for adolescents for promotion of mental health with particular reference to anger.

JUSTIFICATION FOR THE STUDY:

Research in the field of yoga in schools and anger assessment and management is in a primitive state. Initial literature review indicates that anger is a complex construct study and more so to evolve an effective holistic anger management program. The consequences of anger are multi-dimensional and have far reaching effects. This demands inter-disciplinary literature review. In depth review of scientific literature hence became critical for this study.

Inclusion Criteria :

Studies cited in PubMed Central, Science Direct and Google Scholars are included. Authors who shared the Paid Literatures upon request are included

Exclusion Criteria :

Studies before 2005 are not included unless they report key findings. A few papers on theory of anger or development of anger scales have an exception. Studies on chronic anger or its correlated categorised in DSM (Diagnostic and Statistical Manual of Mental Disorders) are excluded

Methods :

This review of scientific literature is carried out by reviewing different aspects of anger, adolescents and yoga separately. At the end a consolidation of all the sub sections is will be made to provide the rationale for the proposed research work. This section directly focuses on the

research studies on the concepts explained in the Introductory section (Section 1), where a brief understanding of the concept of anger and its management in adolescents were provided.

Concept of Anger :

Anger which enables a 'fight' response has been linked to hostility, aggression and violence especially in adolescents. As the distinction and connection between these three construct (AHA syndrome) has long been misunderstood, consideration of interplay of these constructs is essential in order to take forward the research work on these constructs (Julie, Meghan, Ronnie, Michael, 2006). There is a positive correlation among anger, hostility and aggression (Ramírez and Andreu, 2008) and the relation between these terms is mediated by moral disengagement (Rubio, Carrasco, Amor, 2016).

Prevalence of Anger & related issues in Adolescents:

Global scenario: According to indicators of school safety and crime 2015, USA, about 58% of public schools recorded incidents of physical attack or fight without weapon. Higher percentages of females (15%) than of males (13%) reported bullied. Higher percentage of males (7%) than of females (5%) reported being pushed, shoved, tripped, or spit on (NCES 2015). Amongst 94777 Japanese adolescents, 8.7% have experienced intense anger. Study further reports higher levels of intense anger among students who had history of smoking, alcohol use, skipping breakfast and using mobile phones for longer duration (Itani et al, 2016). Out of 1662 Malaysian adolescents, when angry, 7.1% have hit others, 25.1% have hit objects, 27.8% have become aggressive verbally (Rohany and Norisham, 2014). High attitude towards anger and aggressive behaviour was also found in 81% of 426 Malaysian adolescents (Chidiebere, Ma'rof, Hanina, Mohd, 2015). Turkish adolescents, 24% of the 2409, recorded very high rates of aggression scores (Dilek, Mahmut, Kevser, Tugba, 2016). Positive correlation between anger and suicide ideation is reported in 18.5% of 14537 Chinese adolescents suggesting suicide prevention programs should target at attenuating the severity of hostility, anger and physical aggression (Ping et al, 2012).

Indian Scenario: Angry behaviours, bullying, aggression are also on rise among the Indian adolescents. Study of 1500 Indian adolescents reported 23% of victims and 13% of perpetrators of violence. Study also reported high prevalence of bullying and adolescents exposed to violence had poorer school performance and adjustment scores (Munni and Mathi , 2006). About 18% of 5476 youths from different cities of India reported high aggression scores. Higher anger-aggression scores were observed in males than females and also in the age group of 16-19 years (Sharma, Palaniappan, Marimuthu, 2015). Parental anger styles tend to have strong impact on anger expression in Indian adolescent females (Kavitha and Manoj, 2014). Aggression has shown negative correlation with interpersonal and romantic relationships among Indian youth (Sharma and Mohan, 2013). Indian alcohol-dependent youths reported low levels of anger control, high level of trait anger and poor quality of life (Sharma, Suman, Pratima, Marimuthu, 2012).

Adolescent Anger & its outcomes:

Children having high scores of anger and aggression were reported less intelligent, rejected more by their parents, less identified with their parents' self-image and were less likely to express guilt (Rowell, Leonard, Eric, 2002). A meta-analytic study reports that anger has a strong predictive role in eliciting violence offences and has a strong correlation with cognitive distortion (Simona, Sebastian, Daniel, 2012). Intense, uncontrolled feelings of anger are often associated with an array of factors, including emotional arousability, social information processing, externalizing behaviour problems and contextual influences (John, Nicole, Nancy, Heather, 2005)

Adolescents with high trait anger have reported greater frequency and duration of anger episodes and have shown negative health, social and academic consequences (Colleen, David, Scott, 2014). Increased anger in adolescents was related to elevated levels of risk-taking behaviours. Further dispositional anger leads to higher risk-taking behaviour in adolescents (Jungmeen, Christopher, Kirby, 2015). Self-esteem in adolescents reported positive relationship with anger control and negative relationship with trait anger and anger expression. Further anger has negative relationship

with social support (Coskun, 2009). Positive relationship is observed between trait anger and proneness to shame in youth (Jennie and Bernice 2011).

Studies on adolescent population have documented significant association between anger and depression (Pullen et al 2015; Dale et al 2009) stress, suicidal attempts (Stephanie et al, 2009; Ahmad, 2007), conduct disorders, hyper tension, heart diseases, psychosomatic ailments (JoAnne, Sally, Carla 1997). In a study of prevalence of self-injury among 5685 adolescents, 14% of them reported having performed self-injury including suicidal ideation. One of the motivational factors for self-injury was anger and boys were most strongly motivated by sense of anger (Beata, Emilia, Maciej, Marcin, Ewa, 2016)

Anger has shown significant positive correlation with negative life events, drug use, anxiety and depressive symptoms and significant negative correlations with the adolescents' perceived family support, self-esteem, and optimism (Kathryn, Dianxu, Lisa, Tammy, Kirsti, 2008). Studies on premenstrual syndrome in adolescent girls reported high prevalence (59%) of anger/ irritability as a most common symptom (Raval et al, 2015; Doerte et al, 2014).

Anger Taxonomy:

Despite the universality of physiology, anger as an emotion demonstrates variations in terms of conceptualization, perception and expression of anger. Also anger is often blended with other strong emotions such as fear or sadness (Michael Potegal, Gerhard Stemmler, Charles Spielberger, 2010). A Meta analytic review on gender difference in emotion expression in children reports significant but very small difference of negative emotion expression in boys than girls. It also reported change in emotion expression as the age advances and found the shift in emotion expression in adolescent girls from less during childhood to high expression in adolescents (Tara and Amelia, 2013). Variations in anger experience is observed cross-culturally and intra culturally (Iris et al, 2010; Zoltan Kovecses, 2010)

Gender difference was significantly observed in anger expression in adults in a study conducted in India using STAXI-2 Hindi version with males having higher anger expression than females, which implies the need for developing gender specific anger management program (Mamta and Nov Rattan, 2013). Females were found to be predominantly victims in the study on prevalence of violence among Indian adolescents. Males were an important predictive factor for witnessing and perpetrating violence (Munni and Mathi, 2006). African American adolescence reported no gender difference in anger expression scores measured using two scales STAXI and FAS (Cheryl and Rodney, 2002).

Another intervention based pilot study indicated girls having higher levels of anger expression and lower levels of anger control than boys. However, their response to anger management program was better than boys as they showed greater improvement in both anger expression and anger control scores (Isaac Burt, 2015)

Anger Assessment :

While the emotion of anger has become an increasingly important part of clinical assessment, the theoretical and psychometric adequacy of the instruments used to assess anger have long been questioned.

Researchers across globe have developed various theories of anger and an array of psychometric scales to measure adolescent anger (Michael Potegal, Gerhard Stemmler, Charles Spielberger, 2010). The available anger scales use different frameworks and component of anger to assess such as state anger, trait anger, anger control, anger expression, anger suppression, anger hostility, anger rumination etc. Further these scales differ widely in conceptualization, assessment criterion and construct validity. (DiGiuseppe and Tafrate 2007) Below table shows available anger scales and the components they measure

Table 2 : Adolescent Anger Scales and Domains they measure

Sl No.	Authors	Measure	No of items	Dimensions
1	Gerard, Melissa, Bruce (1989)	Padiatric Anger Expression Scale (PAES)	15 items	Anger Out, Anger Control, Anger reflection, Anger suppression
2	Tangney et al (1996)	Anger Response Inventories - Children or Adolescents (ARI-A)	18 items	Anger arousal, Intentions, Maladaptive responses, behaviours, escapist-diffusing responses, cognitive reappraisals, long-term consequences
3	Smith, Furlong, Bates, Laughlin (1998) Furlong et al (2002) Ahmad (2007) Furlong et al (2012) Lucia et al (2015)	Multidimensional School Anger Inventory (MSAI) MSAI Revised MSAI Parsi Version MSAI - Abbreviated Version MSAI - Indonesian version	31 items 36 items 28 items 12 items 25 items	Anger Experience, Cynical attitude, Positive Coping, Destructive expression, Hostility, School anger experience, hostile outlook, Anger expression,
4	Burney and Jeffire (2001) Ezra and Sehvan (2009) Russel et al (2010)	Adolescent Anger Rating Scale (AARS) AARS Turkish Version AARS at Philippines	41 items	Instrumental Anger, Reactive Anger, Anger Control, Total Anger
5	Reyes et all (2003) Victoria, Anton, Spielberg (2003) Brunner, Spielberg (2009) Nualnong et al (2013)	State Trait Anger Expression Inventory (STAXI) - adolescents STAXI children and adolescents (STAXI CA) Spanish adaptation STAXI - 2 Child and Adolescent (STAXI 2 CA) STAXI - 2 (STAXI 2)	44 items 32 items 35 items 32 items	State Anger, Trait Anger, Anger Expression In, Anger Expression Out, Anger Control
6	Lindon et al (2003) Anne et al (2007)	Behaviour Anger Response Questionnaire (BARQ) BARQ for children (BARQ-C)	37 items 34 items	Direct Anger Out, Assertion, Social Support Seeing, Diffusion, Rumination, Avoidance
7	Maria, Jens V (2005)	Strategies of Anger Regulation in Adolescents (SAR-A)	18 items	Confrontations and harming, Distancing, Redirection of attention, Ignoring, Explanation and reappraisal, explanation and reconciliation, self-blaming reappraisal, humor
8	Steele et al (2009)	Anger Expression Scale for Children (AESC)	30 items	Trait Anger, Anger Expression, Anger In, Anger Control
9	Raul et al (2012)	Anger Inventory for Mexican Children (AIMC)	30 items	State Anger, Trait Anger Temperament, Anger Out, Anger Control,
10	DiGiuseppe, and Taftrate(2010)	Anger Regulated & Expression Scale (ARES)	75 items	Internalising Anger, Externalising Anger, Extent of Anger

In addition to these, there are number of scales for aggression, violence and hostility. While some of the scales have theoretically clear concepts, possess excellent psychometric properties and have multitude of uses in clinical and non-clinical settings, they appear to have the limitation of culture specificity and sensitivity. The words used to describe anger (e.g. word ‘mad’) have variety of meaning in different cultures. A study on language to express emotions in rating scales states that

the language which has evidence having understood cross culturally should only be used in rating scales (Barchard, Grob, Roe, 2016). A review study on adolescent anger expression reports that the available scales differ from one another as they measure different aspects of anger (Mathew, Berry 2008). Further a review study on adolescent school anger states that the available psychometric adolescent anger scales do not represent the construct adequately or comprehensively (Smith, Furlong, Peter 2006).

A study on cross-cultural assessment of emotions reports that the self-reporting questionnaires for anger must be adapted for cross-cultural usage and should not be back-translated. Consideration of cultural equivalence of the concept of anger is essential as these differences influence the meaning of words that are used to describe the concept (Manolete, Spielberger, 2011) Some scales have very few subscales and some have many. Number of components and the number of questions also vary from scale to scale. A few adolescent anger scales are standardized from the adult versions retaining the same items and subscale structure. This may be a deterrent for ensuring same factor structure across the age group. While these inventories are more focused on the experience, expression and control mechanisms, less attention is paid to cognitive changes and subjective experiences. There need to be more refined measures of anger to provide a integrative approach to anger assessment.

Anger Management Programs:

Considering the seriousness of the negative outcomes and long-term consequences associated with anger, researchers and clinicians have described a variety of intervention programs for anger management. Among these, cognitive-behavioural therapy (CBT) and skill based approaches are most widely studied and empirically validated. The techniques used in these approaches include affective education, relaxation training, cognitive restructuring, problem-solving skills, social skills training, counselling and conflict resolution. Most of these programs are multi-component in nature and custom made for the individual child or family. Meta-analysis of CBT studies in a variety of

treatment settings such as clinics, schools, residential treatment programs, and community centres shows effects in the moderate range (Denis et al, 2004).

Anger management in adolescence using cognitive-behavioural therapy social-skill training (Selahattin, Coskun, Engin, 2012; Herrmann, McWhirter, 2003) and psycho educational programs are studied in various clinical and non-clinical settings (Kristin, 2005). Meta-analysis and review studies on school based anger management programs report low sample size, multiple measures and lack of clarity in methodology as limitations (Graham, Michael, 2005) and also state that there remains no clear consensus on the efficacy of these treatments. Considering this, an editorial on the school based approaches for anger management states that there is a growing consensus among researchers to develop effective anger management programs for school children (Furlong, 2015).

Emotional regulation, an ability to modulate emotional response to anger is recognized as an important skill in adolescents for ensuring mental health and healthy transition into adulthood. (Nancy Eisenberg, Tracy, Natalie, 2010). However, providing age-appropriate and socially relevant program to develop these skills is a challenge. School-based yoga programs may be appropriate for promoting healthy behaviours at a societal level by focusing on the prevention of negative patterns during the adolescent transition (Lisa, Jessica, Jessica, Ravi, Khalsa, 2013).

Yoga Education in Schools:

Among the school based approaches for anger management, a few programs have incorporated mind-body skills and relaxation which are known to be effective anger management skills. Studies on yoga in schools have reported multiple benefits of yoga for promoting mental health and well-being in high school children (Laura White, 2009). Yoga in schools is effective in managing academic stress, anxiety, ADHD, depression and improving cognitive abilities

Implementation of yoga in education in secondary schools is considered feasible and acceptable (Rangan, Nagendra, Ramachandra Bhat, 2009; Khalsa, Lynn, Deborah, Naomi, Stephen, 2011; Shirley et al, 2013; Bethany, Marina, Shirley, Khalsa, 2015). Yoga can be an appropriate scientific approach that has potential for maintaining mental health among children (Shirley, 2012; Ingunn and Usha, 2014). Studies indicate positive impact of yoga on adolescent cognitive abilities (Chaya, Nagendra, Sumithra, Anura, Srinivasan, 2012), stress alleviation (Laura White, 2012; Miron, Bar, Strulov, 2010; Vernon, Lynnette, Frank, 2003), personality development (Jai et al, 2016), self-awareness, self-regulation (Donna and Marshall, 2016), behavioral and emotional maturity (Laura White, 2009).

Review studies on yoga as clinical application, therapeutical and as complementary therapy for adolescent population reports that the majority of the studies report benefits from yoga, but the evidence is low in methodological quality and quantity (Mary, Robyn, Lauren, 2008; Gurjeet et al, 2009; Lisa, John, Colleen, Emily, 2010). Research on the effects of yoga on anger management in school settings is in its infancy. However, emerging evidence from the above studies suggests that these practices may hold promise. Although effectiveness of yoga in schools for promotion of mental health is seen, available studies suffer from several limitations regarding study design, sample size, methodology, standardization yoga module, absence of control group etc. (Shirley, 2012; Ingunn and Usha, 2014).

A review study on implementation of yoga in schools for improving social-emotional learning and positive student outcomes finds yoga as an effective way to help students to develop Self-regulation, mind-body awareness and physical fitness. Available studies show low to moderate methodological quality (Bethany, Marina, Shirley, Khalsa, 2015). Among the available handful of school based yoga studies on adolescent mental health, anger is measured in a few studies that too as a subscale component. These studies are discussed below:

Table 3: Yoga Intervention studies assessing anger

Author, Year & title	Methodology	Results
Verman et al (2003) Impact of stress reduction on negative school behaviour in adolescents	Adolescents (15-18 yrs), with high normal sys BP; n=45 ; Yoga: 25 (6F,19M), Cont: 20 (7F, 13M), Trans dental Meditation, 15 min group session and 15 min home practice for 4 months	No significant change in anger control and anger out. Anger in – girls in yoga exhibited decrease and control group slight increase. Boys no change.
Khalsa et al (2011) Evaluation of the Mental Health Benefits of Yoga in a Secondary School: A Preliminary Randomized Controlled Trial	11 th & 12 th std students N=121 : Yoga 74 (34F, 40M), Cont 47 (17F, 30M) Yoga Ed Program Average 27 sessions with weekly 2 /3 sessions	Anger being subscale of BASC & POMS, Significant decrease of anger control in yoga. Anger/hostility has shown no significant difference
Noggle et al (2012) Benefits of Yoga for Psychosocial Well-Being in a US High School Curriculum: A Preliminary Randomized Controlled Trial	11 th and 12 th std students n=51: Yoga 36, PE 15 Kripalu program based yoga . Yoga 28 sessions with 2/3 sessions per week	STAXI 2 - Anger Exp Out, Anger Exp In, Anger Control POMS scale anger / hostility No significant changes observed in any anger parameter
Joshua et al (2016) Yoga in public school improves adolescent mood and affect	11 th & 12 th std students N 47, Yoga & PE Single yoga session to see immediate effect	Significantly greater decreases in anger, depression, and fatigue in yoga group compared to PE.

While these studies provide indicative results, as a study to assess efficacy of yoga for anger management, they considerably lack in conceptualization, methodology and measures used to assess anger in adolescents.

To summarize, anger is a strong influencing factor for many negative behaviour, conduct and health issues. Intertwined with other strong negative emotions such as fear and sadness, anger represents one of the most challenging emotions encountered by researchers. Adolescence is a transitional period which requires coping mechanisms to deal with Anger. Schools and colleges can pave way to implement such coping mechanisms as a part of curriculum in schools. There is also a need to develop rating scale to assess anger in Indian adolescent population. Research on Yoga in schools for promoting mental health is in its primitive stage. Study of yoga for anger management has not been carried out in its true sense. No studies have been carried out yoga as an anger management program in adolescent population in India. Review studies on yoga in schools calls for standardisation of yoga module. Lack of conceptual clarity, inadequate measurement tools and

dearth for holistic programs for anger management has become an impediment for progress of research work in the field.

Indian classical texts provide clarity on the concept of anger. They have enumerated many approaches to overcome anger. Great scope for developing a rating scale based on the principles derived from these texts. Yama Niyama concepts of astanga yoga provide strong base to overcome anger. Relaxation and meditation techniques have provided substantial evidence to calm down the mind and to neutralise the sympathetic arousal. Yoga module emphasising yama niyama for anger management in adolescents need to be explored. In this scenario, study of adolescent anger and its assessment and management in a holistic way has become essential and critical.