

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

SECTION - 1

INTRODUCTION



SECTION 1 : INTRODUCTION

This research work is aimed at understanding the concept of anger and its management from two different perspectives i.e. from Spiritual Science and Behavioural Science. Further, the research work also proposes to come out with a holistic approach to assess and manage anger in adolescents using Yogic principles and techniques. A comprehensive and indigenous approach is adopted throughout the study. A brief background of the terms and concepts related to adolescent anger such as adolescence, anger, physiology of anger, taxonomy of anger, anger assessment, anger management, yoga for adolescences and spiritual perspective are provided in this section.

Adolescence :

Adolescence (10 - 19 years), which is the transitional period between the childhood and adulthood, is also a period of vulnerabilities and opportunities. Adolescents are susceptible to many adverse effects of health and safety during this period of rapidly evolving biological, cognitive and psychosocial developmental processes. Hence, smooth transition to adulthood demands adaptation of effective coping mechanisms.

Adolescents of today are confronted with a variety of life stressors both at home and school. They establish patterns of behaviour and make lifestyle choices that have long-lasting effects on future health and well-being. Mental disorders that occur during adolescents have strong implication with all classes of disorders at all life-course stages (Ronald et al, 2007 & Ronald et al, 2010).

By 2020, India is set to become the world's youngest country with 64% of its population comprising of adolescents and youth. Therefore health and safety issues within this paradigm of population cannot be overlooked. One of the strong factors that negatively contribute to adolescent health and safety is Anger.

Anger:

Anger which enables a 'fight' response has been linked to hostility, aggression and violence especially in adolescents. Typically associated with hostile thoughts, physiological arousal and maladaptive behaviours, anger inspires powerful often aggressive feelings and behaviours that affects all aspects of life. Intense, uncontrolled feelings of anger are often associated with violence, road accidents, self-harm and substance abuse. Adolescent anger has been associated with devastating social events besides its negative impact on academic success. Anger is hence considered as a health disparity (CDD, 2009).

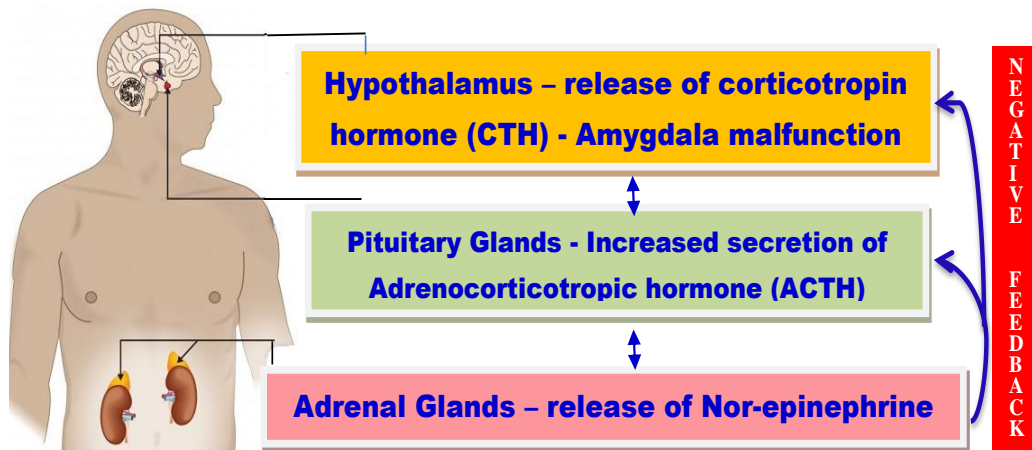
Anger which is the most powerful and vital emotion has strong influence on adolescents' mental health. It has a strong association with the quality of relationship with parents, selfish personality and school climate (Lucia, Esti, Petrus, 2015). Prevalence of persistent anti-social behaviours such as anger, aggression during adolescence causes disruption in multiple life domains (Catherine, Cindy, Hanno, Nicholas, 2010). Childhood anger and aggressive behaviour is considered as a risk factor for adulthood violence and criminal behaviour (Rowell, Leonard and Eric, 2002). Adolescent anger is linked with interpersonal conflicts, inappropriate risk taking and crimes of passion. In addition, anger compromises the immune system (Samuel, Lorenza, Giuseppa and Fulvio, 2014), increases one's vulnerability to illnesses, increases pain, and also risk of death (Suinn, 2001)

The effects of adolescent anger are substantial and adversely influence major institutions of society such as individual, family, neighbourhoods, schools, sports & recreation. It has become a significant social problem. Problems associated with inappropriate expressions of anger are the most serious concerns of parents, educators, and the mental health community. There is also a question whether anger is an emotion with stereotyped response pattern or heterogeneous category (expressions not look same in any given situation). Expression of anger or perceiving the triggers of anger is dependent on many psycho-physiological activities that occur within. The root cause of inappropriate expressions of anger lies in dysfunction at physiological level.

Physiology of Anger:

Anger is marked by powerful chemical and electric activities simultaneously occurring at hypothalamic-pituitary-adrenal (HPA) axis, as shown in figure 1. During anger arousal, a complex series of physiological events occur both in the body and in the brain. During anger, the catecholamine activation is more strongly nor-epinephrine (adreno cortex) than epinephrine (adreno medulla). Adrenocortical effects are mediated by secretion of the pituitary gland and it also influences testosterone levels. These activities have strong implication on various organs, bio-systems and pathways causing short term as well as long term impact (Hendricks, Sam, Dean, Guy, 2013). Adreno cortical effects (in case of anger) have longer duration than medullary effects (in case of fear). Anger is experienced and felt both at body and mind level causing disruption at all dimensions of existence.

Figure 1 : HPA axis activity during anger arousal



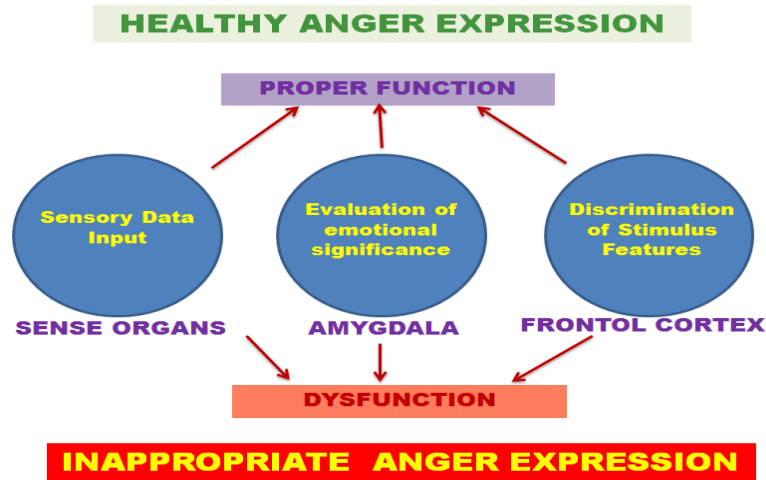
Brain Activity:

In general, anger is regarded as a response to perceived threat or frustration. It is a result of dysfunction at the following systems in brain (Blair, 2012).

- a) Amygdala-hypothalamus-periaqueductal grey circuit - ability to perceive the threat (improper sensory input or over sensitivity to stimulus)
- b) Elevated amygdala processing also called Amygdala hijacking - processing the perceived threat (malfunction or irrational response of amygdala)

- c) Orbital, medial and ventrolateral frontal cortex - regulation of response to threat (impairment of regulatory functions or loss of control)

Figure 2 : Brain Activity during anger arousal



During experience and expression of anger, limbic part (amygdala, the storehouse for emotional memories) overrides the cortex and responds irrationally and destructively. Physical and emotional upsurge is caused by releases of flood of hormones and neurotransmitter chemicals (catecholamine). The impact of this hormonal flush leads to chemical imbalance and lasts for several minutes and at times, longer until the prefrontal cortex reengages and act.

Hyperactive response in the amygdala results in lessening activity in the prefrontal cortex of the brain. Unchecked anger can eventually decrease the production of serotonin in the pre-frontal cortex. Serotonin deficiency increases the chances of angry behaviour and is associated with escalated anger and aggression (Society for Neuroscience, 2007).

Anger arousal is checked by the release of neurotransmitter called acetylcholine by the parasympathetic nervous system which acts more as a neuromodulator. It neutralizes the adrenaline and noradrenaline hormones and helps the body to relax and calm down.

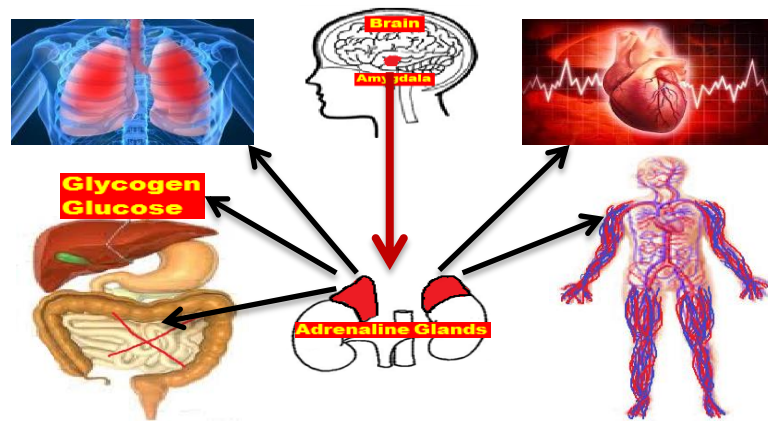
Anger also reduces conscious thought processes in the higher brain centres, leads to narrowing attention span and mind gets locked onto the target of anger (Jungmeen, Kirby, Paula, Ben, 2010).

Body activity:

During anger, the brain sends signals to the body to release stress hormones (cortisol), adrenaline (epinephrine) and noradrenaline (nor-epinephrine). Adrenaline glands acts on to it and pumps out these chemicals. The body also starts producing more testosterone, a chemical that kicks off aggression into higher gear. Excess secretion of neurotransmitters and hormones can cause a multitude of negative effects on the body in addition to release of bursts of energy. Too much nor-epinephrine and cortisol in the body can cause an imbalance in blood sugar. It can suppress thyroid function and decrease bone density (Hendricks, Sam, Dean, Guy, 2013).

A few physiological changes that occur during anger are a) Increased heart rate, b) Increased blood flow to the heart and skeletal muscles, c) Reduced blood flow to the skin, and most other internal organs, d) Shut down of digestive processes and intestinal activity, e) Shut down of kidney function, f) Open the bronchi (two main branches of the trachea, leading directly to the lungs), g) Even healing that is in process is shut down etc.

Figure 3 : Physiological (bodily) changes during anger



Although the physiology of anger is universal, its psychological interpretation and perceptions across cultures are different. Study of anger includes understanding the taxonomy of anger.

Taxonomy of Anger :

Anger being most primitive defence mechanism, determining its maladaptive nature is a complex phenomenon. While anger is discussed for its positive effects, there are no well-defined baselines or homeostatic levels of anger that is considered healthy. Anger, Hostility, Aggression are

relative terms and are part of a cluster constructs called 'AHA syndrome'. The definitions of anger and related constructs are often inconsistent and ambiguous. These words are interplayed due to lack differentiation and clarity in terms of their definition (Ramírez, Andreu 2008).

Distinguished anger researchers have evolved different theories of anger and defined it accordingly. Spielberger (1988) refers anger as an emotional state consisting of feelings that vary in intensity from mild irritation to intense fury or rage, accompanied by activation and arousal of autonomic nervous system. Deffenbacher (1996) defines anger as an experiential state consisting of emotional, cognitive and physiological components that co-occur, rapidly interacting with and influencing each other in such a way that they tend to be experienced as a single phenomenon. DiGiesepe and Tafrate (2007) calls it as a multidimensional construct consisting of physiological (general sympathetic arousal, 5-HT suppression), cognitive (irrational beliefs, automatic thoughts, negative automatic thoughts, causal attributions, inflammatory imagery), phenomenological (subjective awareness of angry feelings), and behavioural (facial expressions, verbal or behavioural anger-expression strategies) variables.

The theory of anger stated by Spielberger is considered more fundamental. His theory categorises anger as State anger and Trait anger. State anger is a momentary anger or psychobiological condition marked by subjective experience over time and across situations. State Anger is the level of intensity of anger at the moment. Trait anger is a kind of carry forwarded anger or a personality type that indicates proneness to anger situations. Trait Anger is the frequency of anger. It is considered to be a general temperament of low threshold reactivity in which angry feelings are experienced in response to a very wide variety of relatively inoffensive triggers. The theory also postulates other components such as expression, suppression and control of anger (Brunner and Spielberger 2009).

Anger is still an emotion that is very much misunderstood and also neglected. Lack of conceptual clarity on anger and its correlates continues to haunt researchers and mental health professionals.

Incidentally, despite its far reaching consequences and negative outcomes, anger is not listed in the Diagnostic and Statistical Manual of Mental Disorders (DSM) unlike anxiety and depression.

Anger is accompanied by physiological and biological changes that are very similar to that of fear, stress, anxiety and depression. Distinction of these is made at the neurochemicals level such as predominant release of cortisol during stress, epinephrine during fear and nor-epinephrine during anger. The biomarker for all these is the sympathetic arousal. Hence there are no specific biomarkers of anger which can be assessed at a non-clinical setting. This has led to dependence on psychological parameters of anger in assessment of anger. The result is emergence of several theories of anger and development of many anger measures or inventories.

Limited investigation has been done on gender effect in expression and experience of anger in adolescents. Available studies provide contradictory results giving ample scope to explore the field (Kushwaha and Akthar 2016).

Anger Assessment:

Psychological assessment of anger is mainly done considering factors that causes anger (stimulants), bio-physiological symptoms of anger (experience) and individual's responses to such stimulants (response). Self-reporting psychometric scales and observation methods are widely used to assess anger both in clinical and non-clinical setting.

Available popular adolescent anger scales include State and Trait Anger Expression Inventory (STAX I-2-CA) (Brunner and Spielberger, 2009), Multi-dimensional School Anger Inventory (MSAI) (Smith, Furlong, Bates, Laughlin, 1998), Adolescent Anger Rating Scale (AARS) (Burney and Jeffrey, 2001) and Anger Regulation and Expression Scale (ARES) (DiGiuseppe and Tafrate, 2010). These rating scales vary widely in their theoretical corroborations, psychometric quality and construct validity. Since psychological paradigm of anger varies across cultures, gender and age (Iris, Emily, Nicole, Ann, 2010), these measures lack generalizability

Anger expression and anger control are two facets that are strongly intertwined. Hence most measures confound the experience and expression of anger with situational determinants of angry behaviour. While there is considerable clarity in assessment of anger experience and expression, there exists lack of consistent theoretical basis to define anger control or anger coping mechanisms. Anger management is hence another area which needs to be explored and assessed to arrive at a holistic understanding of anger.

Anger Management:

Anger management is a key concept of coping mechanisms that are required for smooth transition of adolescent period. Schools and colleges can go beyond imparting academic education, to offer programs that promote good physical and mental health.

Adolescents' ability to modulate their emotional responses to anger is being increasingly recognized as an important skill for ensuring mental health, academic success and healthy transition into adulthood (Nancy, Tracy, and Natalie, 2010). Given the long-term consequences and the seriousness of the negative outcomes associated with anger, researchers and clinicians have described varieties of anger management programs to combat it.

Cognitive-behavioral and skills-based approaches are the most widely studied and empirically validated treatments for anger in adolescents (Denis, Howard, Bernard, 2004). Commonly used therapeutic techniques include affective education, relaxation training, cognitive restructuring, problem-solving skills, social skills training and conflict resolution. Most of these programs tend to be multicomponent in nature and customized to individual and to the family.

Psycho-educational school-based programs are less in numbers and they too are multi-component in nature. Some of the programs have not examined their efficacies and hence little information is known about their contribution to the reduction of anger. Developing an age-appropriate and

socially relevant school based holistic program for anger management in adolescence is a challenging task. Yoga education in schools which has become popular and found to be a holistic and effective program for promotion of mental health is explored in this study to examine its efficacy as an anger management tool.

Yoga and anger management in Adolescents :

Yoga is gaining mastery over mind by establishing harmony between body (physical activity), mind (moral support) and energy (food / breath). Yoga contributes to physical, psychological, social and spiritual development in children and seen as an effective tool for achieving overall development of children. Major forms of yoga are *Karma Yoga* (yoga of action), *Bhakti Yoga* (yoga of devotion), *Jnana Yoga* (yoga of knowledge) and *Raja or Astanga Yoga* (yoga of mental mastery).

In particular Astanga Yoga as enunciated by Sage Patanjali is an authoritative text to gain mastery over the mind. All the eight limbs *Yama* (social discipline), *Niyama* (individual adherences), *Asana* (postures), *Pranayama* (breathing exercises), *Pratyahara* (regulation of senses), *Dharana* (focusing), *Dhyana* (meditation) and *Samadhi* (bliss) focuses on restraining the modifications of mind and channelize the thought processes.

Adolescence is the right age to imbibe moral education. *Yama* (social disciplines) and *Niyama* (individual adherences) are the code and conduct of *Astanga Yoga* which contributes heavily on moral education. The 5 *yamas* are a) *Ahimsa* (non-violence), b) *Satya* (truthfulness), c) *Asteya* (non-stealing), d) *Brahmacharya* (self-restraint) and e) *Aparigraha* (non-covetousness). The 5 *niyamas* are a) *Shoucha* (cleanliness), b) *Santosha* (contentment), c) *Tapas* (penance), d) *Swadhyaya* (self-awareness) and e) *Iswara Pranidana* – Surrendering to Supreme. To reap the benefits of yoga, one should follow disciplined life and engage in practicing all limbs.

Āsanas (Postures), *Pranayama* (Breathing Techniques) and *Dhyana* (Meditations) are the most popular components of yoga which are widely practiced by all age groups across the globe. Meditations and relaxations have shown positive results in alleviating many mental health disorders particularly the stress, anxiety and depression. Increased awareness and popularity of yoga in schools and colleges provide strong grounds to explore efficacy of yoga education to address anger issues in adolescents.

In India, yoga has been an integral part of the curriculum under the subject head 'Health and Physical Education'. Yoga is a compulsory subject up to the secondary school stage. The National Curriculum Framework (NCF) adopted a holistic definition of health, in which yoga is an integral part (NCERT 2011). Yoga or Yogic Science is a group of physical, mental and spiritual practices or disciplines that promotes physical, psychological, social and spiritual health and wellbeing, ultimately leading to discover the human existence or the creation itself. Hence, yogic Science has its roots in the classical Indian Texts including *Vedic* and *Vedantic* scriptures.

Spiritual Perspective:

Adolescence is marked by the term '*brahmacharya*' in the traditional Indian scriptures (Manusmriti 2.173-249), roughly denoting the age group of 8 to 20 years. The prime focus during this stage is to build a disciplined and values-based culture, while seeking the knowledge. It is during this period, moral education is imparted as a foundation for a sound social conduct and overall health and wellbeing of an individual.

Indian Classical texts or Vedic science provides holistic approaches and immense conceptual resources to contribute to the psychological processes. They provide holistic understanding of concepts and paradigms relating to mental health and cover all aspects of the basic entity, the mind (Shamasundar 2008). There is an increasing trend of adopting spiritual concepts and practices for

promoting mental health. Studies on such practices support beneficial effects in favour of sense and well-being.

Anger is considered as an internal enemy and an obstacle in the path of success. Customary *kāma* (desire) and *krodha* (anger) are considered twin attributes. Unfulfilled desire becomes anger. Scriptures talk about many approaches or techniques that help to overcome anger. Yoga being an intermediary discipline between Spiritual Science and Modern Science, it has the potential to provide holistic approach to health and well-being. Yogic approach to anger assessment and management can be holistic by considering the principles of spiritual science and processes of behaviour science.

To sum up the introductory section, anger is a complex phenomenon considering its far reaching consequences and maladaptive behaviours. Despite the numerous studies done on anger and its components, it is still an emotion that is very much misunderstood. However, there appears to be a consensus considering anger as a multi-dimensional construct with its manifestations at physiological (sympathetic arousal, hyperactivity at amygdala), psychological (distorted perceptions, wrong interpretations) and behavioural (fighting, yelling, shouting) level. Holistic or integrative approaches such as combination of spiritual and behaviour science perspective may provide better clarity on Anger, its dynamics and management. Yoga is one such holistic or integrated approach which promotes positive health (Nagarathna R and Nagendra HR, 2008).

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Anybody can become angry - that is easy, but to be angry with the right person and to the right degree and at the right time and for the right purpose, and in the right way - that is not within everybody's power and is not easy.

Aristotle, Greek Philosopher

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