

## Stress: A Modifiable Factor in the Etiology of Adolescent Depression

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In India, 50% of the population belongs to the age group of 0-25 years [1]. The prevalence rate of depression in youth is roughly 15% to 20% [2]. World Health Organization (WHO) projects depression to be the second leading cause of disability by the year 2020 [3]. Stress plays a significant role in the etiology of depression along with the genetic factors [4].

Neuroimaging studies have helped us to understand neurobiology of stress and depression in the living brain in a noninvasive manner. Early life stressors are found to be associated with reduced fractional anisotropy values in the genu of the corpus callosum despite the absence of clinically significant psychiatric symptoms [5]. Fractional anisotropy, a useful measure on the Diffusion tensor Imaging (DTI) of the structural integrity of white fiber tracts, helps us to study human brain *in vivo*. White matter micro-structural abnormalities are reported in fronto-limbic neural pathways in adolescents with Major Depressive Disorders [6].

The huge population of children and adolescents in a developing country like India are subjected to stressors. Several risk factors identified in Indian adolescents are female gender, academic difficulties, parental fights, strained familial relationships, school absenteeism, school dropout, and other school related factors that contribute to psychiatric morbidity [7]. With the limited resources, the focus should be to identify the children and adolescents who are at risk from depression and provide primary, secondary and tertiary level interventions.

In this current issue of *Indian Pediatrics*, Jayanthi, *et al.* [8] reported a positive correlation between the academic stress score and depression scores. Stress is an environmental risk factor for depression which can be modified [9]. It has been observed that cases of depression in school and college students increase when examinations are approaching. Notably, the stress-related mental disorders like acute stress reaction, post-traumatic stress symptoms, adjustment disorders, panic attacks, acute transient psychotic disorders, dissociative disorders, suicide and deliberate self harm, and substance use disorders have been observed in clinical experience in Indian student population.

Interventions to reduce stress need to be carried out at several levels. At the level of government, currently

board examination of the tenth standard school has been replaced by a grading system which is based on the performance throughout the year in the form of formative and summative assessments carried out at school level. Another unique initiative is carrying out stress management workshops for students/parents/teachers at regular intervals.

Measures like setting realistic goals and priorities, time management, adequate relaxation techniques including yoga, walking, jogging, and recreation breaks while preparing for examinations, can help students cope with the mounting academic pressures [10].

It is equally important that parents help children and adolescents through motivation, confidence building, ensuring adequate sleep, fresh short meals, and avoiding caffeinated drinks or substance use. Parents should not compare their children with other high achievers, and should have realistic expectations. It is important to keep home environment conducive for studies. Any form of emotional abuse of child or adolescent in the form of insults, derogatory comments or physical abuse in the form of slapping, etc. should not be done by the parents/caregivers. Individuals with social supports cope up better than the children in the isolated families.

There is a pivotal role to be played by teachers as well. Teachers need to ensure timely completion of the syllabus so that there is ample time for revision, clarifying individual doubts, and mock evaluations. Teachers need to emphasize on 'must read' topics, regular assignments and evaluations. There is a need to develop a good rapport between teachers and students so that they feel comfortable and share their thoughts. Training of teachers for picking up early symptoms of stress and depression in the form of crying, sitting alone, irritable, eating excessively, self harm, substance ingestion, falling grades, inattentiveness, and behavioral oddities can prevent disastrous consequences. Counselors in the school can assist in early identification of at risk students.

Regular counseling sessions for depressed and stressed out students are provided in government run psychiatric set-ups apart from several other non-governmental organizations and private clinics. Pharmacological interventions are effective for managing depression, anxiety and other stress-related psychiatric

disorders. Psychiatric emergencies in the form of suicidal ideation or acts of self harm, and substance ingestion or intoxication should be brought for immediate care at inpatient psychiatric setting.

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