



ENVIRONMENTAL STRESS AND CHANGES IN ANXIETY SCORE AND REACTION TIME: A COMPARATIVE STUDY AMONG DAY SCHOLARS AND HOSTILITIES IN FIRST YEAR MBBS STUDENTS

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Abstract

Medical students often experience different stresses which may affect their emotional, psychosocial and physical health. A study of anxiety score, auditory reaction time (ART) and visual reaction time (VRT) was carried out on 160 medical students, which were divided into two groups; day scholars (60) and hostilities (100). A statistically significant high anxiety score was seen in hostilities in comparison to day scholars ($p < 0.0001$). Similarly prolonged ART and VRT were found in hostilities. From this baseline study we come to a conclusion that medical students face stress at the time of entering their new curriculum, therefore timely counseling and preventive mental health services integrated with other creative and extracurricular activities should be intervened.

Keywords: Auditory reaction time, Anxiety score, Visual reaction time, Day scholars, Hostilities, Medical students

Introduction

The falling autumn leaves and bags packed and waiting by the door signal endings.....and new beginnings. A college life is a beginning of a journey away from home for most of the students. This stage is a stage of mixed emotions for students as well as the parents. The emotions like excitement, happiness, anxiety, fear. The young adults have to pass through a new world with expectations and fears untold. Even though being well adjusted they have apprehension about moving away from home for the first time.

One of the most common problems facing college students is anxiety. Students are burdened with the pressure of being in a new environment, being far and wide from home and stress of the race of doing well in the studies. These students may face many psychological problems most frequent is the anxiety disorder. Typically, anxiety disorders involve disturbances in mood, thinking, behavior and physiological activity. They present as adjustment disorders with anxious disorders, test or performance anxiety, social phobia and sometimes may turn into severe forms as depression and panic disorders. Therefore it is usually not very helpful to pretend that anxiety will simply go away on its own. In the present study the anxiety was assessed quantitatively using anxiety scale. More over the incidence of stress and stress related disorders illnesses such as anxiety and depression among students, qualified physicians internationally is increasingly reported (Elzubeir MA and Elzubeir KE, 2010). Indeed studies also indicate that medical students face unique academic challenges that make them more vulnerable to stress and anxiety than students in other faculties. (Helmert KF et al, 1997).

Human Reaction time is the amount of time it takes for a person to respond to stimuli, or to perform simple reflexive functions. It is the measure of sensory-motor association. (Misra N and Mahajan KK, 1985) The increase in the reaction time indicates that the consciousness and coordination of an individual is slow. This is due to different factors like arousal, age, gender, fatigue, fasting, anxiety, stress, personality type etc. So reaction time was used as a tool to find out the effect of anxiety on cognitive functions in students. Many studies have been performed to assess the stress in students during examination, but very few studies are done to find out the anxiety in the students during admission and entrance in the new environment. Therefore the present work was done as a preliminary effort to see the psychological status of the students during their first step in the new program of study.

Material and Methods

The present study was carried out on 160 students in GMC, Nagpur in the first two week after admission in the college with voluntary participation after understanding the nature of study. All the students were in age group of 18-19 years. None of them was suffering from any major medical or psychiatric illness. They were divided into two groups; hostilities (n=100) and day scholars (n= 60).

Anxiety was assessed using Hamilton anxiety scale (Sajatovic M and Ramirez FL, 1998). It is a widely used scale to evaluate anxiety symptoms at baseline and consists of 14 items. Each item is rated on a 0-4 scale (0 = not present, 4 = severe) with a final item which rates behavior. Sum of the score of each was noted as anxiety score.

Visual reaction time and auditory reaction time were measured by using Digital Response time apparatus having an accuracy of 1 millisecond. Green light was used as a stimulus to measure visual reaction time. High pitch sound was used to measure auditory reaction time. The readings were taken between 11 am -1 pm in a quiet secluded room. For each test, practice trials were administered until we were satisfied that the subjects have understood and performed the task as required.

Mean and Standard Deviation were calculated and student's unpaired t test was used for comparison, where $p < 0.05$ was taken to be significant.

Observations

Table 1 shows the mean and standard deviation of Anxiety score, Visual and Auditory reaction time in Hostilities and Days Scholars students group. Also this table depicts the result of comparison of these values in Hostilities and Days Scholars students group.

The anxiety score was found to be more in the hostilities students as compared to the Day scholars and the difference was found to be statistically significant.

Auditory reaction time was found to be more in in the hostilities students as compared to the Day scholars and the difference was found to be statistically significant.

Similarly, Visual reaction time was also statistically higher in the hostilities students as compared to the Day scholars

Table 1: Table showing the comparison of Anxiety score, Visual and Auditory reaction time in Hostilities and Days Scholars students group.

Parameters	Hostilities (n=100)	Days Scholars (n=60)	p Value
Anxiety Score	6.88 ± 4.66	12 ± 6.57	$P < 0.00001^*$
Visual reaction time (Sec)	224.53 ± 22.18	285.57 ± 37.04	$P < 0.00001^*$
Auditory reaction time (sec)	186.38 ± 23.04	254.37 ± 55.42	$P < 0.00001^*$

(* $p < 0.005$; difference is statistically significant.)

Discussion

In the present study, the anxiety as depicted by the anxiety score was present in the new students, however, as seen statistically it was more in the students staying in hostel. When students enter college, they leave behind the comfort that their parents and home provide them. In a place where everything is new right from room to person, the anxiety of new environment and academic performance add to their homesickness, which is known as separation anxiety in college students, where they find it difficult to share with another person. This condition predisposes students to a lot of psychosocial, mental and physical stress.

Life as a medical student possesses particular challenges and stressors which can impact quality of life (Taha AZ and Sabra AA, 2012). Various studies on the medical students have reported high levels of stress and psychological morbidity among medical students (Guthrie EA et al 1995).

Many previous studies conducted on stress reveals that the prevalence of stress among medical students ranges from 30%-50% (Firth-Cozens J et al, 2001). This level is high in comparison to that of the general population and that of students in other study courses. Al-Dabal BK showed that stress prevalence was higher among first year MBBS students and diminishes progressively by fourth year (Al-Dabal BK et al. 2010).

The potential sources of stress among students may include academic stress, enormous syllabus to be covered in a limited period of time, sudden change in their style of studying, lack of proper guidance, thought of failing in exams, relationship with peer groups, expectations of parents, change in medium of education and to all above the hostilities have their own set of problems including hostel friends, hostel food, peer pressure and displacement from home.

The WHO (World Health Organization, 2004) estimates that mental disease, including stress related disorders will be the second leading cause of disabilities by the year 2020. Stress coming from different sources like academics, personal situations, time or economic circumstances, personal situations can have negative outcome on student's health, grades and personal adjustment (Nelson NG et al. 2001).

Home sickness in hostel life although not a very serious issue, but if not handled at a proper time can lead to precarious circumstances including depression, leaning towards alcohol, drug abuse and even suicide. Chronic stress is also known to influence memory and learning.

The study has shown a high occurrence of anxiety among students when they enter their new professional medical curriculum which is found to be more in hostel students. The study can be a baseline for authorities to look with more

depth into student's health and well being. We recommend the establishment of students counseling unit, supportive and preventive mental health and services which may enable them to cope up with their new phase of life, and may be integrated with extracurricular activities like yoga, meditation, sports etc. It is important to identify the students who are more vulnerable to mental stress. These attempts may help to alleviate academic pressure and develop perfectionist standards in medical career which requires emotionally demanding training to deal with different aspects of life (human suffering, death, fear, sexuality) (Takeichi M and Sato T, 2001).

Stress also has negative outcomes on physical health, as known that there is increase in the blood levels of hormones due to stressful conditions like cortisol, epinephrine, which are all lipolytic in nature. WHO research group has recommended the need of exploration of these behavioral factors as probable cardiovascular risk factors (Agarwal V, 1997). Looking into these negative outcomes timely intervention of psychological disorders is mandatory.

Our study has shown statistically significantly prolonged visual and auditory reaction time in hostilities. High levels of stress are known to affect cognitive functions. It has an impact on concentration, memory, learning and arousal. It is proposed that stress affects cognitive functions via epinephrine and more slowly via glucocorticoids. (McEwen BS and Sapolsky RM, 1995)

Stress (physical and psychological) acting through the sympathetic nervous system and brain- pituitary - adrenocortical axis affects decision making and attention. Some of these factors either acting directly or indirectly may be contributing to reaction time.

Conclusion

Looking into the results of the study it is important to take necessary steps so that there is improvement and excellence in their adjustment and performance in the medical profession, as we look back into the ancient education system where apart from teaching importance was given to physical as well as mental education.

Different strategies can be adopted including;

- Mentoring
- Yoga and Meditation
- Personality assessment
- Counseling: emotional (coping with hostel life, teenage issues, mild depression due to difficulty in studying)
- Career counseling
- Workshops can be organized on personality development, goal setting, stress and time management.

On a note of conclusion 'if u cannot change the field just change your vision'

Hostel life always helps a student to become social and outspoken. It allows students to interact with their peers and colleagues, make friends develop into good human beings capable of independent decision. One should remember that hostel is always a home away from home!

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