

Impact of traditional vestibular stimulation on depression, anxiety and stress in college students.

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Abstract

The present study was undertaken to provide evidence for positive impact of vestibular stimulation on depression, anxiety, and stress among college students. 240 Healthy college students of the age group of 18-24 of either sex were included in the study after obtaining free, written, voluntary informed consent. Vestibular stimulation was achieved by swinging on a swing (Back to front direction). The DASS is a 42-item questionnaire was used to assess depression, anxiety and stress. Depression, anxiety and stress scores were significantly ($P < 0.001$) and similarly reduced in both males and female students following vestibular stimulation. Our study provides evidence for the beneficial effect of vestibular stimulation in management of depression, anxiety and stress among college students. Hence palliative approaches such as vestibular stimulation should be recommend for stress management among students in educational institutes.

Keywords: College students, Depression, Traditional intervention.

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Introduction

India has profound traditional knowledge which is the most valuable gift to self and to the humanity in general. However, it was not being utilized in a systematic manner as most of us are unaware of our tradition due to this hi-tech life style [1,2]. One of the earliest medical systems, Ayurveda was developed in India. According to Ayurveda, both *ahar* (edibles) and *vihar* (behavioural lifestyle) correction is necessary for treating mental disorders. Ramayana, Mahabharata and Bhagavatam, Vedas etc are not just shlokas written on pages, but they have an impact on our attitude and behavior. The techniques/methods/treatments mentioned in those books are the intellectual properties of our elders and it is our responsibility to understand them thoroughly and prove them scientifically to develop many therapies which are adoptable and affordable to the common man.

Earlier studies suggested that suicidal feelings and actions are relatively in college students and a strong relationship exists between the severity of symptoms and suicidal ideation in this group [3]. Depression affects academic performance of students and provokes them to follow unhealthy habits like smoking, drinking etc. [4-6]. The vestibular system is present in the inner ear and its optimal stimulation is essential throughout the life to prevent/delay lifestyle disorders. Though there are many methods available to stimulate vestibular

system, the simplest way was incorporated in Indian tradition. Swinging on a swing is a traditional method of stimulating vestibular system [7-10] which can be practiced by all age groups and can be incorporated in our routine day life style. Vestibular disorders are commonly associated with anxiety [11] and vestibular stimulation can be used as an intervention for depression, anxiety and stress. According to National institute of mental health, 30% of the college students are depressed and they may not know where to go for help [12]. Hence, it is essential to diagnose depression at early stages and help the students to prevent depression. The present study was undertaken to observe the impact of vestibular stimulation on depression, anxiety, and stress among college students.

Materials and methods

We conducted the study as an experimental study with pre and post with control, at the department of physiology, Little Flower Institute of Medical Sciences and Research and Little Flower Medical Research Centre in India. The present study was conducted in consultation with the psychiatrist of Little Flower Hospital and Research Centre. 240 Healthy college students of age group of 18-24 of either sex were included in the study after obtaining free, written, voluntary informed consent and Participants involved in drug/alcohol abuse, and those taking any kind of medication or suffering from any

somatic or mental disorders, participants with a history of use of corticosteroids in the past year, students with a history of antidepressant medication, and students on hormone supplements including oral contraceptives and ear infections or any vestibular disturbances, those with cardio-respiratory disorders were excluded. Selected participants were randomly assigned to four groups.

Group MC (n=60): Control male group (No vestibular stimulation was given).

Group FC (n=60): Control female group (No vestibular stimulation was given).

Group MV (n=60): Intervention male group (Vestibular stimulation was given for 146 ± 5.6 days)

Group FV (n=60): Intervention female group (Vestibular stimulation was given for 147 ± 6 days)

Vestibular stimulation

Vestibular stimulation was administered by making the participants swing on a swing, according to their comfort. (Back to front direction) as standardized by previous methods [8,9].

Assessment of depression, anxiety and stress

Depression Anxiety Stress Scale (DASS): The DASS is a 42-item questionnaire which includes three self-report scales designed to measure the negative emotional states of depression, anxiety and stress. Each of the three scales contains 14 items, divided into subscales of 2-5 items with similar content. Items on the DASS are rated on 4-point Likert - type, ranging from 0 (Did not apply to me at all) to 3 (Applied to me very much, or most of the time). The higher the scores on each subscale indicate more depression, anxiety and stress [13].

Statistical analysis

We used the 20th version of statistical package for social sciences for statistical analysis of our data. Data was expressed as mean \pm SD. Statistical comparisons were performed by One-way ANOVA followed by tukey HSD test. P-value <0.05 was taken as significant.

Ethical consideration

The present study was approved by Institutional human ethical committee of Little Flower Hospital and Research centre, Angamaly, Kerala, India.

Results

Depression, anxiety and stress scores in vestibular and control groups are presented in figure 1: Pre intervention (D0) depression, anxiety and stress scores were similar in all the four groups. While the depression, anxiety and stress scores remained unchanged after follow up in the control groups (D1 in MC and FC groups), all these scores were significantly ($P < 0.001$) reduced in the groups receiving vestibular stimulation

(D1; MV and FV groups). Further the beneficial effects of the vestibular stimulation were similar among both male and female students.

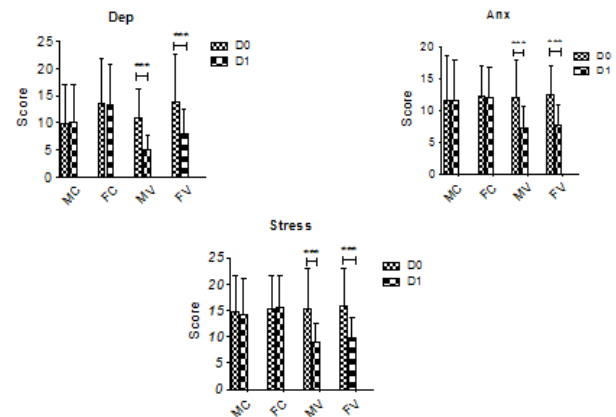


Figure1: Depression, anxiety and stress scores in male and female participants of vestibular and control groups. (n=240) (Values are expressed in Mean \pm SD. **P value <0.05 , ** P <0.01 , ***P <0.001 . VM- Vestibular males, VF- Vestibular females, CM- control males, CF- Control females. D0- pre intervention score, D1- post intervention score. Dep-Depression, Anx- Anxiety).

Discussion

Depression is the psychiatric disorders of major public health importance. Depression scores were significantly higher in female students in both relaxed state as well as the stressed state [14]. Our study agrees with the earlier studies as we have observed higher depression scores in female participants.

Depression/anxiety co-exists with vestibular disorders [15]. Although most psychoactive drugs are used therapeutically to treat mental disorders, unfortunately, are abused. Many abused drugs act by enhancing the effectiveness of dopamine in the pleasure pathways and gives the intense sensation of pleasure [16, 17]. Winter et al., reported that in salivary cortisol levels were decreased in volunteers who subjected to front to back motion on a hexapod [18]. Optimal vestibular stimulation relieves most of the symptoms of depression through its connections with the structures of the brain involved in emotions, behavior and cognition [7]. Unlike the psychoactive drugs, vestibular stimulation does not alter dopamine levels [19] and cause minimum or no side effects. Further, vestibular stimulation by swinging on swing doesn't need practice and easily adoptable and affordable to the general population. Hence, it can be incorporated in routine day life style to prevent depression. In our previous studies, we have observed steady and significant decrease in salivary cortisol, Blood pressure and blood cell counts, followed by vestibular stimulation [8]. The present study agrees with earlier studies as we have observed a significant decrease in DASS scores followed by vestibular stimulation.

Conclusion

This study provides evidence for the beneficial effect of vestibular stimulation in management of depression among college students. There is a need for a future study with higher sample size to substantiate the therapeutic validity of vestibular stimulation as an intervention for prevention of depression among college students.

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