



Lifestyle Interventions in Stress Management: A Study among Delhi Youth

*Bajpai, M., Rao, E., & Jindal, R.
Bhaskaracharya College of Applied Sciences,
University of Delhi
*madhulika.bajpai@bcas.du.ac.in

ABSTRACT

Stress in last few decades has taken epidemic proportions across the world. The most alarming concern is that the affected ones include young as well as school-going children. This study is an attempt to test the efficacy of the three-lifestyle principles suggested in Ayurveda, Aahaar (food), Vihar (recreation/exercise) and Vichaar (thoughts/emotions) for early and effective stress management amongst the youth. A survey was carried out on 718 students pursuing under-graduate programs in Delhi-NCR. Several psychological tests were performed to assess the stress levels in the participants and 167 students were found to be in the high-risk zone. On the basis of willingness and availability, 100 students were selected for further study. They were divided equally into Experimental and Control groups. Based on the information collected through psychological tests and dietary survey, suitable lifestyle interventions were carried out through invited lectures, workshops, yoga sessions, regular dietary interventions and personal counselling (as and when sought by the subjects). A pre-and post-test research design was used. The results indicated significant differences in the scores of experimental group on certain parameters. Positive results indicated the efficacy of these Ayurveda principles in effective stress management. If these principles are incorporated as lifestyle changes, they can enable us to manage, reduce and prevent stress. We believe the study should be replicated on a larger sample with more vigorous interventions and for a longer duration to suggest sustainable solutions.

Keywords: Ayurveda, Holistic-Health, Lifestyle, Stress, Stress-Management & Youth

INTRODUCTION

“Pressure and stress is the common cold of the psyche”. - Andrew Denton

The quote above highlights the rising incidence of stress in our contemporary lives. However, unfortunately recovery from stress is not as easy as from a ‘common cold’. It requires necessary intervention, supervision and most importantly to learn mechanisms to cope by strengthening one’s immunity to stress. Stress can be defined as, “a negative emotional experience accompanied by predictable biochemical, physiological, cognitive, and behavioural changes that are directed either towards altering the stressful event or accommodating to its effects” (1).

“Absence of stress is (equivalent to) death”; it is an inevitable part of human existence that one can’t wish away. Since “stress-free” existence is not possible, the next best thing we can create is a “stress-controlled” environment and a holistic lifestyle that helps us to prepare on “how to manage stress”, which is the aim of this study.

United Nations defined ‘youth’ as, “a period of transition from the dependence of childhood to adulthood’s independence and awareness of our interdependence as members of a community”. For the sake of statistical consistency, it suggested that people between the age of 15 and 24 years fall in the category of youth” (2). In India, National Youth Policy (2014) includes individuals between the ages of 15-29 as youth (3). This developmental phase of transition is marked with various physical, emotional, cognitive and behavioural changes that are difficult to understand and adjust for them. In the absence of awareness, support and suitable interventions, they can easily slide into issues related.

Research has highlighted that youth today faces tremendous challenges and as a result is prone to stress (4). The fast-paced life, unrelenting cut-throat competition, changing and disintegrating family systems, lack of social support and numerous challenges posed by social media has made the lives of young adults a roller-coaster ride (5). Though in many ways, the quality of life is far better for the younger generation than their parents but beyond the comforts of materialistic and technological advancements, they face unprecedented challenges. These glaring and distressing trials that the new age society poses, raise several concerns (both physical and mental), especially for the youth of the nation. On one hand the society faces steady increase in number of suicides amongst the youth (6, 7, 8, 9) (India is considered to be the suicide capital of the world), juvenile delinquency (10) and depression (11, 12) and on the other we also face lifestyle disorders like, obesity (13), diabetes and hypertension (14)

The National Mental Health Survey (2015-16) has revealed a few alarming statistics in its comprehensive report (15). According to the report, close to 15% Indian adults need immediate help for one or the other mental health concerns; One in 20 Indians suffer from depression. The most distressing reported fact in year 2012 is that 2,58,000 people committed suicide where most of them were between the ages of 15-49 years. The above-mentioned statistics and survey results are just an indication of how physical and mental health concerns are rapidly increasing where the afflicted ones are the youth of the country.

According to the United Nations' Population Funds' (UNFPA), State of the World's Population Report (2014), India has the world's largest youth population. The report highlighted that there are about 356 million people who are 10-24 years old (16). This demographic transition has its benefits and the future does seem promising, however, there are certain other alarming and distressing facts. Youth today, faces several kinds of stresses. They could be mental or physical, which in turn, may be due to academic challenges, interpersonal relationships, intrapersonal relationships, family pressures, poor eating habits or low self-esteem etc. (17, 18). In case of University of Delhi, (our subjects were all enrolled in different courses) there are additional challenges, as it's a melting pot of people from different class, ethnicity, race and religion. The most important challenge is that a large number of students stay away from family and with little support available, life can get very stressful at times. All these stressors along with challenges to adjust and competition for careers can be overwhelming for many. Depending on the severity and persistence of stress, the implications on youth can be far-reaching and all pervasive. Unfortunately, there is no formal structure in place, which can prepare our youth to cope with their daily stressors or learn to reduce the intensity and occurrence of the same.

This study is an attempt to analyse the inclusion of our own ancient, indigenous and time-tested lifestyle habits for an efficient and largely stress-free existence. An attempt has been made to suggest various life style interventions, which would include traditional Indian foods, relaxation techniques, psychological and physical interventions in order to help the youth cope better with stress. The objective was to evaluate the additive and interactive effects of interventions in the stress responses of our subjects. The main idea behind the study was, "prevention is better than cure". Our youth may obtain enhanced benefits from the suggested skills as soon as they learn to follow them. It was hypothesized that there would be a significant difference in the pre and post-test scores of experimental group signalling the positive impact of the various interventions introduced during the research period.

METHODOLOGY

The study began with an awareness drive amongst students. Posters were displayed and interactions with the students were held to generate awareness regarding stress. The survey was carried out on a sample of 718 students pursuing under-graduate courses in Delhi NCR region. The sample was screened with the help of psychological tests: Student's Stress Scale (SSS) and Academic Stress Questionnaire (ASQ) which were designed to assess their stress levels. Those who scored above 60% in any sub-test of SSS or ASQ were considered to be in high risk of potential stress. Based on students' willingness and availability for interventions, 100 out of 167 students were found to be in high-risk area and they were then selected for the proposed study. The sample was further divided into Experimental and Control Groups with sample size of 50 in each group. Multidimensional Health Profile (MHP) was then used to provide assessment of characteristics relevant to mental and physical health.

A dietary survey was also carried out on the experimental group by a "24-hour recall" method to assess the nutritional status of the subjects. Based on the information collected through psychological tests and dietary survey, suitable lifestyle interventions (dietary,

psychological and physical) were carried out to help them improve their psychological, physical and nutritional well-being. The two groups were further tested after the interventions on the same parameters to assess the impact of the various interventions. Due to displacement of students and unavailability of data, finally 47 in experimental group and 40 in control group were selected for statistical analysis. Towards the end of the study, a booster workshop was carried out to refresh the interventions provided in the previous months and also to cement the concept of lifestyle changes for the experimental group

Measures: The following nutritional and psychological parameters were used to assess the pre-scores of the subjects:

Psychological Assessment	Nutritional Assessment
Student's Stress Scale by Dr. Manju Aggarwal	24-hour recall method
Multidimensional Health Profile by L.S., Ruehlman, R. I. Lanyon and P. Karoly	Body Mass Index
Academic Stress Scale by M. Akram, M.I. Khan & S. Baby	

On the basis of information and data obtained in the proposed study, the results were analysed following both descriptive and inferential statistics. Further, the inferential statistics based on comparison of experimental and control group after intervention and pre- and post-intervention of experimental group were also analysed.

Interventions:

Various interventions that were provided to the subjects during the course of the study are as follows:

Dietary interventions: A nutritious and a well-balanced diet is the key to reduce the impact of stress on the body and effectively repair any damage. The experimental group was given nutritional education and counselling focussing on the use of Indian traditional foods that heal and prepare them to cope with stress better through talks and interactive sessions with experts in the field such as Public Health Nutritionist. Nutritional counselling was done to emphasize the need to select and consume healthy foods and keep active by indulging in 30 minutes of physical activity. The interventions emphasized on the selection and consumption of Indian indigenous healthy foods even when eating out such as in college canteens, cafeterias etc. This was further reinforced by using awareness posters and dietary intervention which included twice a week mid-day nutritious snack/ salad, beverages such as lassi/buttermilk/nimbu pani or other nutritious food items such as amla murrabba, banana, fruit chaat, dried anjeer, or chikki, til ladoos etc. to emphasize on the concept of imbibing healthy lifestyle choices in order to effectively manage stress and thereby improve the quality of life. The college canteen was encouraged to provide healthy eating options to the students such as fermented and steamed indigenous traditional snacks such as Idli, Dhokla, Utappam, Lassi, Buttermilk, Lemonade, Sprouts-bhel, etc. Studies have shown that providing students with information about healthy choices even at point-of-purchase, can influence positive dietary behaviour (19).

Physical interventions: Multiple benefits of physical activity, yoga and exercise across the life course are well known (20) and more generally add to quality of life, as confirmed by the World Health Organization (WHO). Considering the deleterious effects of stress and sedentary behaviour on health, these results have implications for lifetime physical and mental health (21, 22, 23). Thus, health promotion interventions for young adults may benefit from the incorporation of physical activity strategies designed to reduce stress (24). These were carried out at group and individual levels for the experimental group. Workshops with experts were held to teach the various yogasanas and explain the importance of pranayama and meditation to help combat stress. A feedback on student's concerns regarding their physical activities was also taken. They were encouraged to engage in some form of daily exercise for thirty minutes at the least.

Psychological interventions: Stress is subjective, not everyone experiences similar degree of stress from the same stimulus. Fig. I show, how stress is perceived and responded to by individuals.

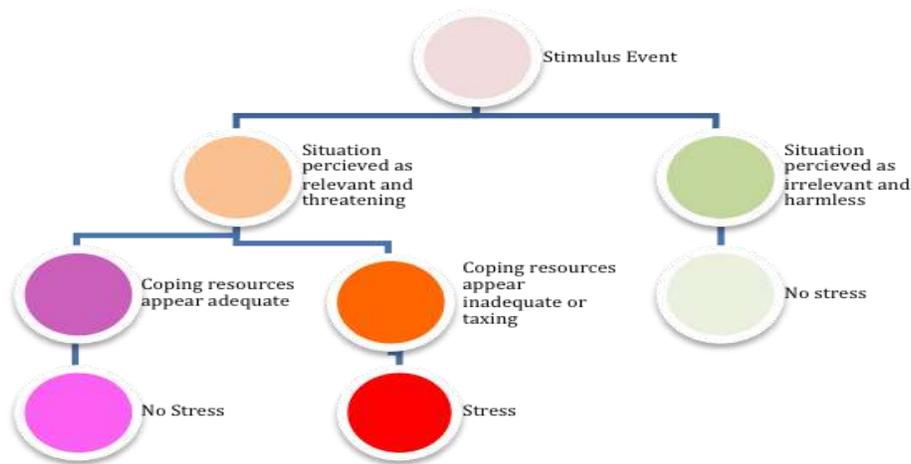


Figure I: Process of Stress Appraisal

As the figure above suggests that it is our appraisal of a situation that determines our subsequent response and eventual health outcomes (25). Thus, it formed the basis of the psychological interventions provided to the experimental group. Specific concerns were raised during rapport formation. Subjects wanted interventions to deal with issues like, examinations, life stressors, time management, prioritizing, overcoming procrastination and relationship stressors. Hence, interventions were designed for the experimental group at both group and individual levels. For few subjects, who requested additional supervision, individual counselling sessions were arranged according to their convenience. Workshops by experts were carried out for issues related to stress management and life skills to enable the subjects to cope with their life stressors more effectively. The idea behind these interventions was to arm them with relevant skills and resources [to](#) manage their life stressors effectively. Certain tools that have been found to effective in stress management were introduced to the subjects (26, 27, 28, 29). They were encouraged to keep a personal journal/diary, make time tables, expand their support network, work with others on their problems etc. to learn better coping mechanisms.

RESULTS AND DISCUSSION

The present study was aimed at investigating the efficacy of traditional life style interventions based on the principles of Ayurveda in management of stress amongst the youth. Demographic details of the hundred subjects staying in Delhi-NCR are depicted in the figures (II, III & IV).

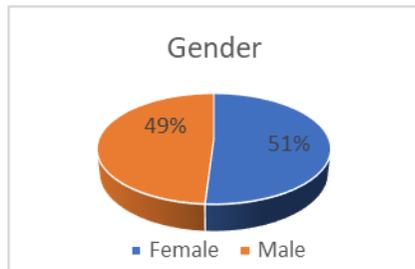


Figure II: Gender Distribution

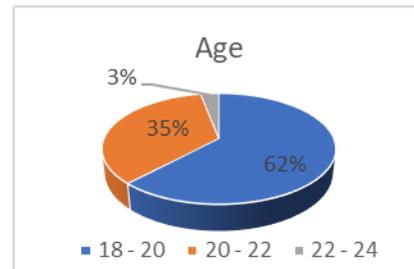


Figure III: Age Distribution

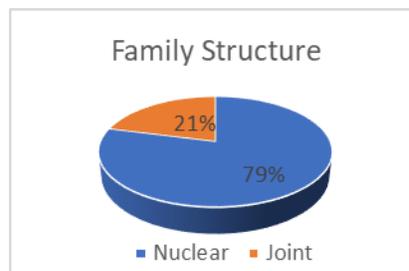


Figure IV: Family Structure

At the beginning of the study, subjects reported inadequate nutrition in their daily diet. The energy intake of majority of subjects was found to be below the Recommended Dietary Allowance (RDA) as per the ICMR (29). After interventions of nutritional counselling and dietary interventions, the number of experimental subjects consuming total calories according to their RDA significantly increased from 15% to up to 25% (Fig. V).



Figure V: Energy Intake in Experimental Group Pre and Post-Interventions



Figure VI: Energy Intake in Control Group Pre and Post-Intervention

Whereas, among the control group it decreased from 28% to 17% as depicted in Fig. VI. This shows significant increase in energy intake of the experimental subjects.

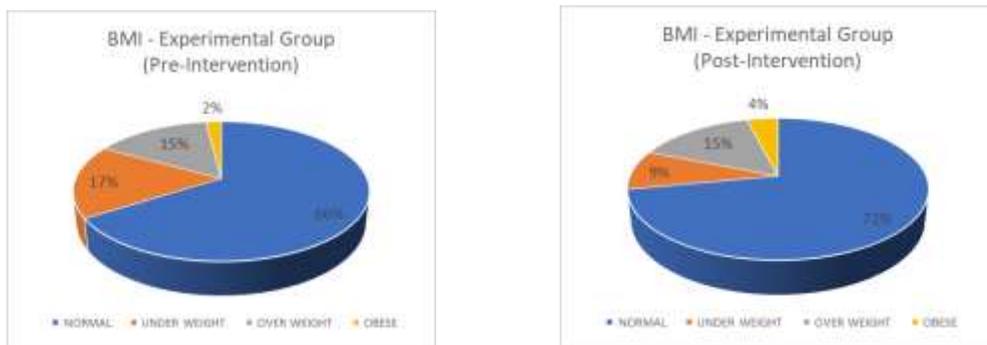


Figure VII: BMI of Experimental Group Pre- and Post-Intervention

In the experimental group, there was a marked reduction in the number of underweight subjects and a significant increase in number of normal subjects was observed post-intervention and nutritional counselling (Fig. VII). Greater percentage of subjects i.e. 6% in the experimental group achieved normal Basal Metabolic Index (BMI) after the intervention as compared to only 4% in the control group as depicted in Fig. VIII below. A difference in the obese subjects was observed when compared to control, though was not found to be statistically significant.

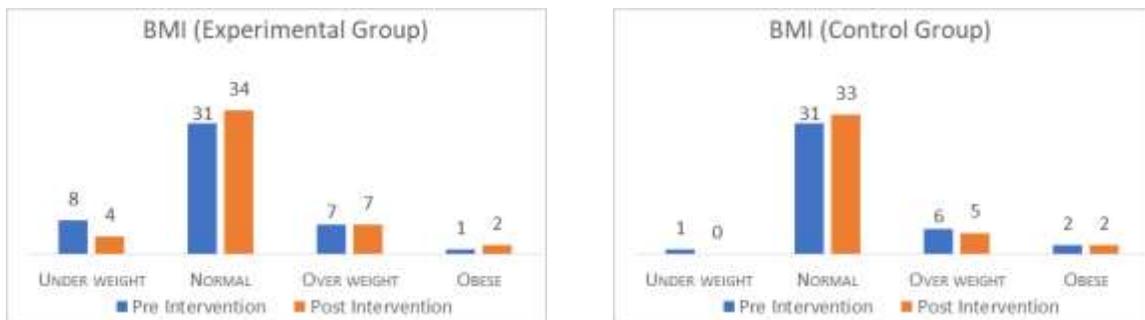


Figure VIII: BMI of Experimental and Control Group

The various psychological interventions used in the study yielded mixed results. Though, most of the experimental group subjects showed significant difference in their scores, in some, difference was not statistically significant. Also, on many parameters, the scores of the control group subjects also improved despite no formal interventions given to them. The following results and their interpretation will throw more light on the same. The first test that was carried out on the subjects was, Student Stress Scale to ascertain specific stressors that affect students. The results of the pre and post-intervention scores are given below:

Table I: Comparison of Pre and Post-Intervention Scores of Experimental Group on Sub-scales of Students Stress Scales and SSS score (df=46)

Sub-scales	Mean	Std. Deviation	Mean Difference	Standard Deviation of Difference	t-value	P-value
PRE-FINANCIAL	13.98	8.331	3.489	7.095	3.372	.002
POST-FINANCIAL	10.49	8.361	3.106	11.052	1.927	.060
PRE-FAMILY	19.62	8.629				
POST-FAMILY	16.51	9.984	3.277	6.937	3.238	.002
PRE-SOCIAL	11.40	5.747	14.213	23.162	4.207	.000
POST-SOCIAL	8.13	6.177				
PRE-EDUCATION	48.40	20.346				
POST-EDUCATION	34.19	22.519	6.936	14.005	3.395	.001
PRE-EGO THREAT	25.62	12.956	.809	8.438	.657	.515
POST-EGO THREAT	18.68	12.058				
PRE-BEREAVEMENT	10.09	7.898				
POST-BEREAVEMENT	9.28	8.348	1.383	4.387	2.161	.036
PRE-SEPERATION	7.62	5.050	2.936	10.372	1.941	.058
POST-SEPERATION	6.23	5.486				

PRE-PERSONAL SETBACK	12.04	11.116				
POST-PERSONAL SETBACK	9.11	10.081	4.574	9.186	3.414	.001
PRE-HEALTH OF OTHERS	16.64	9.611				
POST-HEALTH OF OTHERS	12.06	9.099	40.087	60.010	4.660	.000
PRE-SSC	165.40	55.703				
POST-SSC	124.62	76.820				

Table I shows significant decrease in post-intervention scores as evident by $p\text{-value} < 0.05$ for financial, social, education, separation, ego threat and health of others. As expected, $p\text{-value} > 0.05$ for family, bereavement and personal setback showed insignificant decrease in the scores, since factors such as family, setbacks and bereavement are unlikely to alter within a short duration (subjects were re-examined after a gap of six months). However, $p\text{-value} = 0.00 < 0.05$ for Student Stress Scale, showing a significant reduction in SSS scores post intervention goes on to prove that the interventions carried out had a positive impact on the experimental group. However, there was no significant difference in the scores of experimental and control group after the interventions. It could be attributed to intermingling of the subjects and sharing information. Also, the various community outreach programs and the passing of information through social media could have benefitted control group as well. It highlights that just information alone can bring in desired results

Second tool used was to understand the most common stressor for the subjects in the sample age group that is, academic stressors. Table II highlights the significant difference in the pre and post-test scores on Academic Stress Questionnaire.

Table II: Comparison of Pre- and Post-Intervention Scores of Experimental Group on Academic Stress Questionnaire Scores (df=46)

Academic Stress Questionnaire (ASQ)	Mean	Standard Deviation	Mean Difference	Standard Deviation of difference	t-value	P-value
Pre-ASQ	42.40	17.515	9.596	22.544	2.918	0.005
Post-ASQ	32.81	20.787				

Since $p\text{-value} = 0.005 < 0.05$, this shows significant reduction in ASQ scores post intervention. The various psychological interventions such as time management,

prioritization, timetable and dealing with procrastination could have helped the subjects deal better with their academic stress (31). There was no significant difference in the post intervention scores of experimental and control group for ASQ. The factors mentioned above of sharing of information would hold true for this result as well.

The third tool used for psychological testing was Multi-dimensional Health Profile Questionnaire. It had two sub-scales, one that measured mental health and the other physical health. Results highlighted that there was a reduction in most of the scores of experimental group on both sub-tests. Also, the need for a follow up owing to higher scores (reported during pre-intervention) did come down on both the sub-tests for experimental group. Similar but not as significant reductions were found in some sub-scales of control group as well (Fig. IX & X)

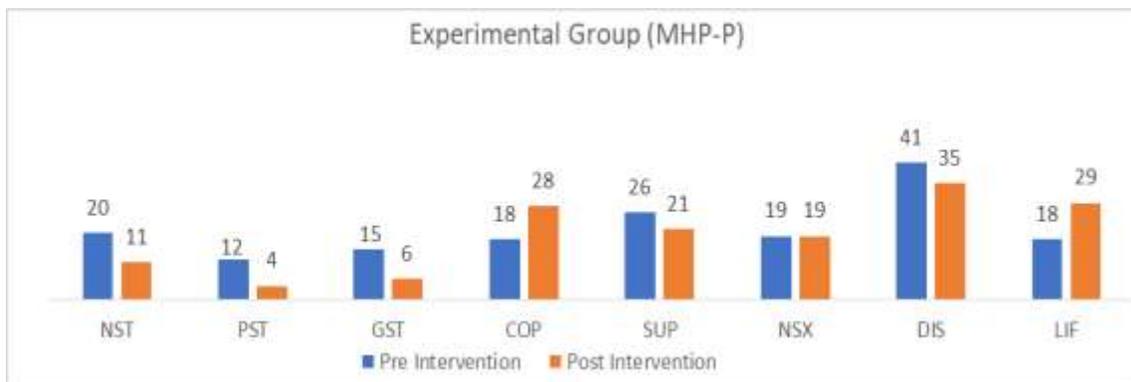


Figure IX: Number of Subjects Recommended or Strongly Recommended Follow-up Pre and Post-Intervention on Multi-dimensional Health Profile Questionnaire- P Scale

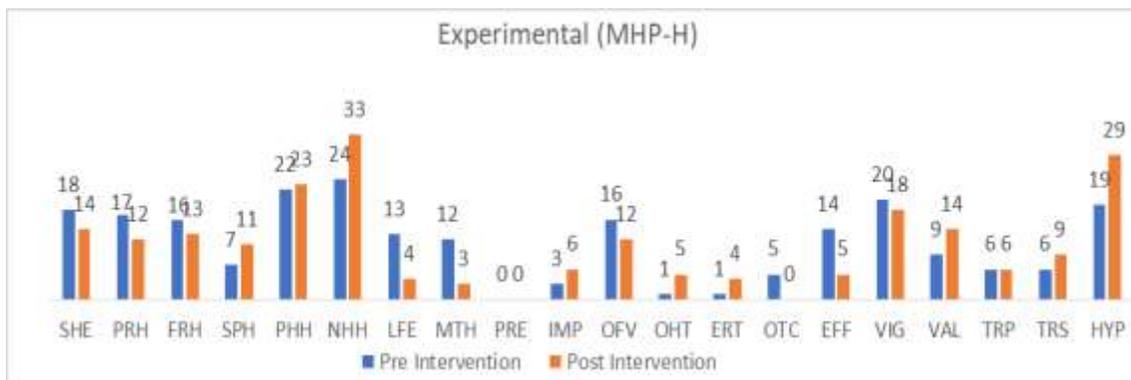


Figure X: Number of Subjects Recommended or Strongly Recommended Follow-up Pre and Post-Intervention on Multi-dimensional Health Profile Questionnaire-H Scale*

* List of Sub-tests of MHP (P & H)

MHP (P)	MHP (H)	OFV: Office Visits
NST: No. of Stressful Events	SHE: Self-Help	OHT: Overnight Hospital Treatment
PST: Perceived Stress	PRH: Professional Help	ERT: Emergency Room Treatment
GST: Global Stress	FRH: Help from Friends	OTC: Over the Counter Medication
COP: Total Coping	SPH: Spiritual Help	EFF: Self-Efficacy
SUP: Total Support	PHH: Positive Health Habits	VIG: Health Vigilance
NSX: Negative Social Exchange	NHH: Negative Health Habits	VAL: Health Values

Thus, though the number of subjects found to be in high risk of potential stress in the pre-intervention phase showed a sharp decline in their scores after the interventions were applied. However, the trend was similar to an extent for the control group as well (Fig. XI).

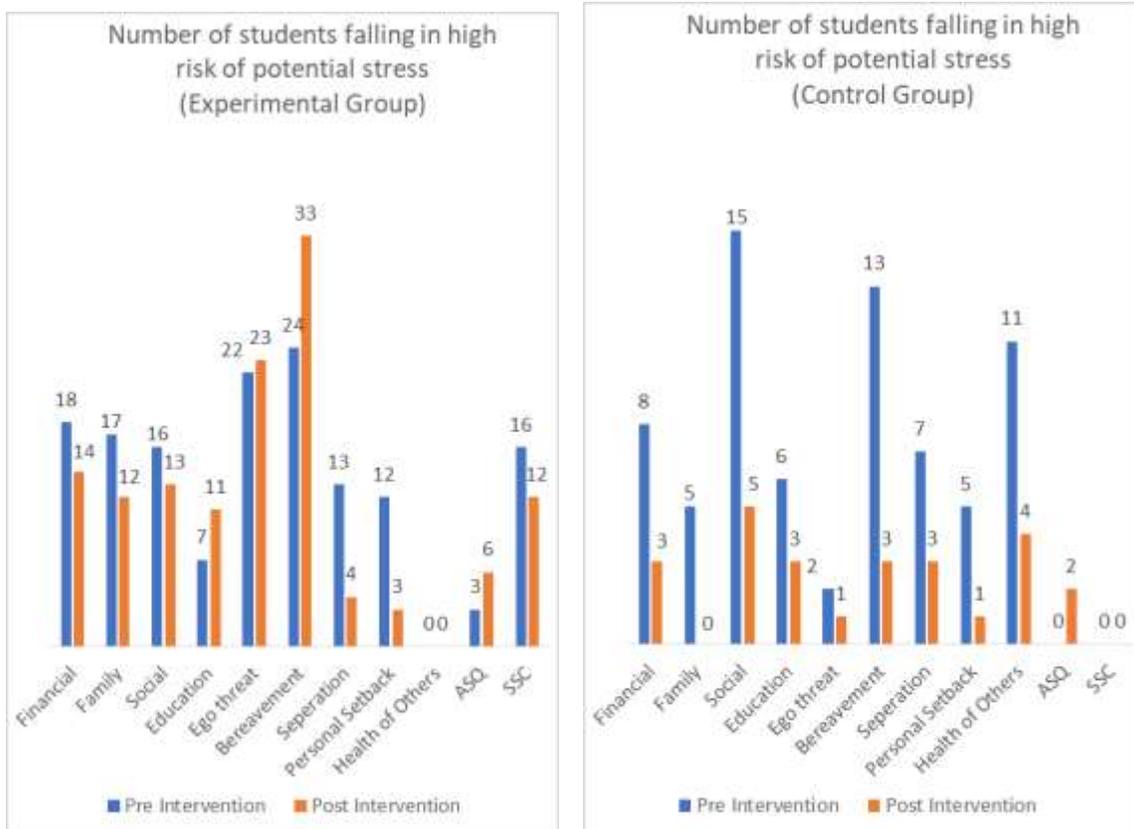


Figure XI: Pre and Post-Intervention Scores of Experimental and Control Groups

This could be attributed to the peer influence and access to information through community outreach. Also, there is a tendency of natural maturation that could have taken place whereby the scores of control group also improved. Lastly, since the interventions were carried out within the college premises (due to limitations of the sample), there were chances that cross learning could have taken place.

CONCLUSIONS AND FUTURE DIRECTION

In the present competitive times, young people are suffering from various stress related outcomes. Changing social milieu, rampant presence of mass media and the challenges of this developmental phase of life can have a cumulative and negative impact on the youth. Hence, there is a dire need for interventions that can prepare them to handle the stressors more effectively. Through this study, the three-principles of Ayurveda were put to test to see if they helped subjects cope better. Results revealed that dietary, physical and psychological interventions could bring about positive changes in the physical and mental health of youngsters, which would help them to live a more stress-controlled life.

Overall results have highlighted the need and importance of lifestyle interventions in stress management among youth. It was an attempt to integrate several life style interventions especially traditional Indian principles of holistic well-being to manage stressors that affects youth. Traditional Indian wisdom has always emphasized on a holistic outlook to health, the need for which is strongly felt during the study. Stress management has to move from a “stress-response chain” to a lasting lifestyle style change. Holistic health is the only way forward if we wish to live a more fulfilling life.

REFERENCES

1. Taylor, S. E. (2015). *Health Psychology* (9th Edition). United States of America, USA: McGraw Hill Education.
2. <http://www.unesco.org/new/en/social-and-human-sciences/themes/youth/youth-definition/>
3. http://www.youthpolicy.org/national/India_2014_National_Youth_Policy.pdf
4. Reisberg, L. (2000). Student Stress is Rising, Especially among Young Women. *Chronicle of Higher Education*; 46(21), 49-50.
5. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4216492/>
6. <http://www.indiaspend.com/special-reports/a-student-commits-suicide-every-hour-in-india-3-85917>
7. <https://www.thebetterindia.com/108700/suicide-prevention-a-growing-public-health-concern-in-india/>
8. <https://scroll.in/article/694364/four-charts-show-why-indias-youth-suicide-rate-is-among-the-worlds-highest>
9. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4247159/pdf/nihms395150.pdf> doi: 10.1016/S0140-6736(12)60606-0
10. Pillai, A., Andrews, T. & Patel V. (2009). Violence, Psychological Distress and the Risk of Suicidal Behavior in Young People in India”. *International Journal of Epidemiology*. April, 38(2):459-69.
11. <http://www.nimhans.ac.in/sites/default/files/u197/NMHS%20Report%20%28Prevalence%20patterns%20and%20outcomes%29%201.pdf>
12. <https://www.hindustantimes.com/health-and-fitness/65-indian-youngsters-show-early-signs-of-depression-study/story-9JJoIWNn0FsRINKcHFYnwM.html>
13. Joshi, S.R. (2005). Management of Obese Indian Patient. *Indian Journal of Obesity*. I (1): 11-20. ^[1]_{SEP}

14. Joshi, S. & Parekh, R. (2007). India Diabetes Capital of the World and now Heading [Towardstowards](#) Hypertension. *The Journal of the Association of Physicians of India*, June, 55:323-24.
15. <http://www.nimhans.ac.in/sites/default/files/u197/NMHS%20Report%20%28Prevalence%20patterns%20and%20outcomes%29%201.pdf>
16. <http://eeca.unfpa.org/en/publications/state-world-population-2014-report>
17. Misra, R., McKean, M., West, S., & Russo, T. (2000). Academic Stress of College Students Comparison of student and faculty perceptions. *College Student Journal*, 34(2), 236-245.
18. Nonis, S., & Hubson, G. (2006). Academic Performance of College Students: Influence of Time Spent Studying and Working. *Journal of Education for Business*, 6, 151-159.
19. Subbulakshmi, G., Subhadra, M. (2013). *Nutrition in Traditional Therapeutic Foods*. Vol-1; Daya Publishing House, New Delhi.
20. Yadav R., Magan D., Mehta N., Sharma R., and Mahapatra S.C.(2012), 'Efficacy of a Short-Term Yoga-Based Lifestyle Intervention in Reducing Stress and Inflammation: Preliminary Results, *The Journal of Alternative and Complementary Medicine*, 18(7), 662-667.
21. Mellbin, T & Vuille, J (1989). Rapidly Developing Overweight in School Children as an indicator of Psychosocial Stress. *Acta Paediatrica Scandinavia*. 78:568–575.
22. <https://www.hindustantimes.com/fitness/ht-youth-survey-no-yoga-no-exercise-young-india-hardly-exercises/story-Z79BbmTl2cypkeFeu5QiiL.html>
23. Lissau, I., Sorensen, T. (1994). Parental Neglect during Childhood and Increased Risk of Obesity in Young Adulthood. *Lancet*. 343:324–327.
24. Selena T. Nguyen-Michel, et al. (2006). Associations between Physical Activity and Perceived Stress / Hassles in College Students, *Stress and Health*. 22: 179–188.
25. Keller, A, Litzelman, K, Wisk, L, E., Maddox, T., Cheng, E. R., Creswell, P D. & Witt, W. P, (2012). “Does the Perception that Stress Affects Health Matter? The Association with Health and Mortality”. *Health Psychology*, Vol 31(5), Sep 2012, 677-684.
26. Cooper, C.L. and Palmer, S. (2000). *Conquer Your Stress*. London: Chartered Institute of Personnel and Development.
27. Maddi, S. (2006). Hardiness: The Courage to Grow from Stresses. *The Journal of Positive Psychology*, 1(3), 160-168.
28. Pierceall A., & Kim, C. (2007). Stress and Coping Strategies among Community College Students. *Community College Journal of Research and Practice*, 31(9), 703-712.
29. Karagianopoulou, E. & Kamtsios, S. (2011). Stages of Change, Self-efficacy and Stress Management Perceptions in Undergraduate Students. *International Journal of Psychology and Behavioral Sciences*, 1(1), 1-9.
30. Dietary Guidelines for Indians: A Manual. (2010) Second edition. National Institute of Nutrition, Hyderabad.
31. Lay, C.H., & Schouwenburg, H.C. (1993). Trait Procrastination, Time Management, and Academic Behavior. *Journal of Social Behavior & Personality*, 84(4), 647-662.