

## Effects of Asthanga Yoga & Dietary Program on Physical and Mental well being of Under Graduate Students

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### Abstract

**Introduction:** Sedentary life style among undergraduate medical students is leading to non communicable diseases like under nutrition and over nutrition (obesity), common mental disorders including stress and anxiety. Prevalence of non communicable and mental illness in India is 9.3–23.0%. Sedentary behaviour, primarily assessed as time spent viewing mobile phones, and electronic devices increases risk for overweight and obesity in students. The sedentary time spend by students is an average of 6 and 8 hours per day. The activities with these devices have further increased due to Covid -19 online classes increasing the usage time further. Yoga increases awareness, which often leads practitioners to start making changes in every part of their lives.

**Methods:** Formation of an IP (Inter Professional) team and developing Yoga module and nutritional diet chart module. After developing online modules, zoom online Yoga sessions were implemented. The sample size selected was 60 MBBS Students, out of which 30 were considered under test and 30 students under control. Students under case study have received Yoga module with dietary program. Students under control have received Yoga module without dietary program. Asthanga yoga zoom online classes were conducted. The session lasted for 1 hour. Four such sessions per week were conducted for one and half months (6 weeks). Each session comprised of forty minutes of Yoga Asanas (postures), ten minutes of Pranayama (breathing exercises), and ten minutes of Meditation. The sessions were video recorded.

**Results:** The interprofessional team was formed and the Yoga and nutritional modules were developed and validated. After study results were statistically analysed. Following the Yoga sessions and nutritional intervention, the parameters have shown significant P value

interpreting the intervention has helped. Chi square test determined that the difference in the proportion of pre- and post sessions were statistically significant,  $\chi^2(1) = 13.25, p < .0005$ .

Conclusion: The study intends to educate the students regarding effects of Asthanga Yoga & dietary program on physical and mental well being. It brings about improved quality of life individually and knowledge gained thus helps during medical practice.

**Keywords:** Interprofessional team, Yoga module, Nutritional module, Medical students, Asthanga Yoga, Pranayama, Meditation, Online zoom Yoga sessions, stress, physical and mental health.

### Introduction

Sedentary life style among undergraduate medical students is leading to non communicable diseases like under nutrition, over nutrition (obesity), common mental disorders including stress and anxiety. Prevalence of non communicable and mental illness in India is 9.3–23.0%<sup>1</sup> Sedentary behaviour, primarily assessed as time spent viewing mobile phones, and electronic devices increases risk for overweight and obesity in students. Students spend an average of 6 and 8 hours per day, in sedentary behaviour, both during and outside of Medical college. The activities with these devices have further increased due to Covid -19 online classes increasing the usage time further.

Excessive usage of social media in the form of snap chat, instagram, face book, whatsapp, twitter, pub G, video games and YouTube is leading to excessive mental stress. The act of sharing each and every life moment on social media to keep in par in comparison with peers is most of the times useless. Ultimately the students are losing peace of mind which is leading to stress and anxiety. Raising the standards of Yoga practice to global standards will lead to better outcomes such as better education standards, better health, and patient care practices. Yoga is mind-body technique which involves relaxation, meditation and a set of physical exercises performed with breathing. Being holistic, it is the best means for achieving physical, mental, social and spiritual well being of the practitioners. This can be achieved by systematic and disciplined practice of Ashtanga Yoga described by sage Patanjali. It brings a healthy thinking in students. Stretching into a Fit Life Yoga becomes part of our physical life. Yoga helps to maintain a balanced metabolism. The knowledge and skills gained during this program will help the entire medical students' community to overcome stress and improve their health. Most of the medical students suffer silently from anxiety & depression as they usually have mental stress due to huge syllabus. Sedentary life style adds to obesity. So, instead of focusing just on weight loss program it is important to control co-morbid factors and to understand link between stress-anxiety-depression and obesity which will help the students' to concentrate and achieve better. The study will prospectively assess the effect of comprehensive Yoga based life style modification program on obesity and to evaluate the influence of Yoga in relieving symptoms of anxiety and depression. It also improves memory and concentration. It creates good atmosphere in class whole day. Contextual background to research in Yoga education has been done by Micheline Flak (PhD) by successfully introducing Yoga techniques into French national education system around 32 years ago. The same is now introduced in MBBS curriculum according to NMC guidelines. It has been used alongside classroom practice to improve student's learning, attention and self-esteem. It's successfully being implemented in Europe, South America and USA. The origins of the techniques developed by Micheline Flak are based on philosophy, which has been around for millennia namely Patanjali's Yoga Sutras. Yoga aims to make all aspects of the self-harmoniously united: mind, body and emotions –

these three need to interact cooperatively but cannot do so, unless this union is achieved. Until this happens there is a continuous waste of energy. Lack of concentration is one of major problem today, and both children and adults suffer from this inability to fix the mind on one subject. Yoga techniques help to develop the power of concentration, like a muscle, by exercising it. If sufficient concentration can be developed, the brain can pass from the emission of beta waves, associated with the everyday wakeful state and conscious attention, to the emission of alpha waves, associated with passive awareness, a relaxed state of mind and greater receptivity to the learning process. This is when optimum learning can take place.

A significant proportion of students have health impacting behaviours and conditions that affect their growth and development, that the problem is on the increase, many are interlinked and coexist, and likely to increase in the coming years<sup>4</sup>. Some of the major health impacting behaviours and problems among the students include under nutrition, over nutrition, common mental disorders including stress and anxiety<sup>5, 6</sup>.

It may be concluded from the findings of the study that with the intervention of Yoga, general health improves by optimizing the stress levels. So it is suggested that Yoga module should become a regular feature in the Medical Colleges. Yoga can be made as integral part of the curriculum of 'Health and Physical education'. Under long term measures, we expect that we would develop a curriculum to our under graduate and post graduate students, which can be followed by all Medical Colleges throughout the Country.

"Medical students' stress levels and sense of well being after six weeks of yoga and meditation". This study was done by Lona Prasad et al. In an effort to minimize the potentially detrimental psychological burden on medical students, the addition of a Yoga program to the Medical college curriculum could be a feasible option. Yoga is inexpensive, potentially rewarding, and safe when taught by experienced certified trainers<sup>10, 11</sup>. A sedentary and unhealthy lifestyle results in a depressed mood, low energy levels, and an overall pessimistic attitude. Sometimes, it just takes one thing to start turning it all around. Yoga can be that one thing. Because it can be practiced by individuals at any age, Yoga is a practice that can be adopted by virtually everyone<sup>12</sup>. Yoga increases our awareness, which often leads practitioners to start making changes in every part of their lives. As they develop more self-awareness, they often make changes that include healthier food choices, fewer toxic relationships, and more time to take care of themselves<sup>13</sup>. Over time, these choices add up to a much healthier and happier lifestyle. The increase in overall quality of life can even equal more years on your life<sup>14, 15</sup>. Of all the elements that play a role in your overall health and fitness, nutrition and exercise are crucial. **Yoga and good nutrition can work hand in hand to balance your mind and body, supporting your emotional and physical well-being at the same time.**

#### **MATERIALS AND METHODS:**

The study is a cross-sectional study conducted among the undergraduate medical students. Interprofessional Team was formed which comprised of Yoga Therapist, Psychologist, Psychiatrist, Dietician and IT Professional. The team developed and delivered the teaching module. Students chosen were MBBS students from Government Medical College, Siddipet, Telangana state, India.

**Sample size:** Random sampling was done. A sample size of 60 is calculated using episoft calculator keeping 5% confidence limits with a design effect 1.0 and 95% confidence limit. The students in the study group were primed about the study plan. The study was conducted

through zoom online mode. Pre zoom online sessions were conducted for two days for medical students to increase the awareness of Yoga, nutrition and meditation by eminent speakers of our interprofessional team. It was followed by six weeks online AsthangaYoga sessions.

The sample size was 60 MBBS Students, studying at Government Medical College, Siddipet, Telangana State. Students were divided into two groups of 30 students in each group. 30 were considered under test and 30 students under control. After developing online module, online Yoga sessions were implemented for one hour through zoom. Asthanga yoga session consisting of forty minutes of Asanas (postures), ten minutes of Pranayama (breathing exercises), and ten minutes of Meditation were conducted. Four Asthanga yoga sessions were conducted per week for 1 and half months. Students under study were receiving Yoga module with dietary program. Students under control were receiving Yoga module without dietary program.

**TABLE 1: Pre study zoom online sessions :**

Online Teaching Module	Time allotted	Delivery model/Resource	Monitoring and evaluation
Lecture sessions			Pretest  Post test  Students Feedback
1. Introduction to Asthanga Yoga through interprofessional educational approach.	5 mins	Online zoom meet	
Briefing regarding Dietary program information	5 mins	Online zoom meet	
Nutritional dietary chart explanation	15 mins	Online zoom meet PPT Presentation	
Briefing regarding stress among undergraduates and prevention measures	15 mins	Online zoom meet PPT Presentation	
Video of demonstrating yoga	15 mins	Online zoom meet Playing video	
My story by an undergraduate student practicing yoga and dietary program	15 mins	Online zoom meet	
Yogasanas	40 Mins	Online zoom meet	
Pranayama	10Mins		
Meditation	Mins		

Students were divided into two groups. Both the groups had Asthanga yoga sessions, so they are not deprived of the hands on skills. After developing the above online module, online Yoga sessions were implemented. Yoga physician has helped with yoga sessions. Nutritionist has given the diet chart for six weeks at an interval of every 10 days.

**Evaluation :** Pre and post- test questionnaire were given to both the groups. Extensive review of literature was done and questions were developed in reference with the already validated

questions .The content validity check for questionnaire was done by involving five experts from Government Medical College, Siddipet, Telangana state, India. Each expert was given a copy of the scale and explained the purpose and objectives of the study to them individually. The experts were then asked to rate each item based on relevance, clarity, grammar or spelling, ambiguity and structure of the sentences on the five-point Likert scale.

Written informed consent was obtained from the students by disclosing that the data collected was for research purpose, that the questionnaire was anonymous, and that their participation in the study will be voluntary. To encourage students to answer all questions freely, no question to identify the students was used in the questionnaire.

Statistical data was analysed by using paired t-test, Chi square test was used. Signed Rank test using SPSS 22.0 version. P <0.05 was considered as significant.

**RESULTS :**

Online zoom yoga sessions were conducted for six weeks, four days in a week with 60 participants, 30 as study group and 30 as control group. Online zoom yoga sessions were conducted and all the sessions were video recorded on zoom. Post session questionnaire was shared and answers were collected from all the 60 students and were documented. The results were analysed with the help of statistician. Pre test & post test statistical analysis is done in detail after careful collection of data which is as follows.

**TABLE 2:Gender wise distribution of participants**

Gender	Case n (%)	Control n (%)
Male	24	11
Female	6	19

**TABLE 3: Pre and post intervention comparison of exercise and fitness of participants**

Pre_intervention	Case				Control		
	Post_intervention		p value		Post_intervention		p value
	No	Yes			No	Yes	
Do you exercise							
No	0	4	<.0005	1	18	0.500	
Yes	4	22		0	11		

**Interpretation:**

**Case:**

Out of 26 students, 4 Students do not exercise and 22 students exercise post intervention. A Chi square test determined that the difference in the proportion of Exercise pre- and post-session was statistically significant,  $\chi^2(1) = 13.25, p < .0005$

**Control:**

Out of 11 students, all 11 students exercise post intervention. Chi square test determined that the difference in the proportion of Exercise pre- and post-session was statistically significant, p value 0.500

Hence the study shows that students started doing exercise post intervention.

**TABLE 4: Pre and post intervention comparison of eating habit of participants**

Pre_intervention	Case			p value	Control		
	Post_intervention		p value		Post_intervention		p value
	No	Yes			No	Yes	
Do you eat fruits?							
No	2	1	1.000	0	1	1.000	
Yes	0	27		0	29		

**Case:**

Chi square test determined that the difference in the proportion of eating fruits pre- and post-session was statistically not significant, *p* value 1.000

**Control:**

Chi square test determined that the difference in the proportion of eating fruits pre- and post-session was statistically not significant, *p* value 1.000

Hence the study shows that students started were eating fruits post intervention.

**TABLE 5: Pre and post intervention comparison of biochemical parameters of participants**

Variable	Case			Control		
	Pre (Mean ± SD)	Post (Mean ± SD)	p value	Pre (Mean ± SD)	Post (Mean ± SD)	p value
FBS	86.70 (6.56)	79.19 (3.96)	<.0005	83.07 (4.70)	76.33 (4.34)	<.0005
PLBS	121.3(13.24)	107.0(7.94)	<.0005	114.1(11.42)	101.4 (8.90)	<.0005
Total Cholesterol (mg/dl) pre	170.70(10.16)	163.53(11.77)	<.0005	176.33(10.23)	169.53(12.99)	<.0005
Systolic BP	116.33(6.15)	108.00(7.14)	<.0005	110.80(5.24)	107.0(5.35)	<.0005
Diastolic BP	76.73(4.71)	76.07(4.91)	0.161	72.0(3.93)	71.47(3.44)	0.174
Ham A Score	14.30(6.65)	4.60(3.19)	<.0005	15.38(3.34)	1.83(3.04)	<.0005
General yoga stress	3.10(0.84)	4.83(0.46)	<.0005	2.83(0.70)	4.30(0.75)	<.0005
General yoga Academics	3.70(0.47)	4.30(0.47)	<.0005	3.33(0.71)	4.13(0.57)	<.0005
NA – Functional foods	2.34(0.31)	2.19(0.33)	<.0005	1.95(0.31)	1.83(0.31)	<.0005
NA- Special diet	0.83(0.07)	0.73(0.08)	<.0005	0.85(0.06)	0.74(0.08)	<.0005

**Interpretation:**

Various parameters including biochemical parameters were checked pre and post intervention. Following the Yoga sessions and nutritional intervention, the parameters have shown significant P value interpreting the intervention has helped. Chi square test determined that the difference in the proportion of pre- and post sessions were statistically significant,  $\chi^2 (1) = 13.25, p < .0005$  except for diastolic blood pressure.

**DISCUSSION:**

Online Yoga sessions have helped in improvement of physical and mental wellness among students. Students are benefitted as awareness for application of Asthanga Yoga and nutritional

therapy for maintainance of self health and also educating the society for the same has increased. With regard to patients the students' would guide patients to maintain good health along with giving them medical treatment. The outcome of our project will definitely help medical students' community because the knowledge acquired will help them to know the application of Yoga Therapy in health and disease. Students would be able to apply the knowledge of Anatomy, Physiology, Bio chemistry and various other medical subjects learnt during MBBS curriculum, with the interrelationships between systems of the body. Knowledge of common pathologies and co relate it to indications of yoga practices. At the end of the sessions students got benefitted as they gained knowledge on Asthanga Yoga and importance of nutritional therapy. They developed positive attitude towards Asthanga Yoga and dietary requirements. They would be able to implement Asthanga Yoga and nutritional therapy for maintainance of self health and also educating patients during their practice, thereby help in buiding healthy society.

### CONCLUSION:

Yoga is very good in relieving stress and anxiety thereby helps medical students to be more productive during their professional life with ease. Yoga and dietary intervention is as effective as yoga alone. If we continue this intervention for longer duration we anticipate that yoga and dietary intervention might improve biochemical parameters more.

### ACKNOWLEDGEMENTS:

I would first like to acknowledge my FAIMER ( Foundation for Advancement of International Medical Education and Research) course director Dr Ciraj AM from Manipal college of health professions (MCHP), Manipal Academy of Higher Education,(MAHE), Karnataka, India. for giving me this opportunity. Second I would also like to thank my Director Dr Tamil Arasi, my Head of the Department Dr K Aparna Veda Priya Government Medical College, Siddipet, Telangana, India, for supporting my study. I would also like to acknowledge my mentors, Dr Krithica, Dr Amrutha Roopa, IP team members Dr Sadnandam etc., my students for their immense support, my FAIMER seniors, especially Dr Imran\_2019, Dr Rajani Ranganath\_2019 for their guidance; my co fellows especially Dr Sudha\_2020, Dr Rajashree\_2020, Dr Suyog\_2020 for their support, last but not least my college FAIMER 2018 two fellows - Dr Srinivas who is Vice Principal who helped for Institutional Review Board approval and Dr Geetha, who has always supported me in every aspect of project work.

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