Research Article

DOI: http://dx.doi.org/10.18203/2394-6040.ijcmph20163375

Cross-sectional descriptive study of lifestyle patterns of undergraduate medical students in a metropolitan Medical College

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Received: 08 August 2016 Accepted: 06 September 2016

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ABSTRACT

Background: Studies report physical inactivity, mental stress, tobacco and alcohol use and unhealthy and untimely dietary habits in a sizeable proportion of medical students. This complete-enumeration, descriptive study was conducted in a metropolitan teaching hospital to assess the dietary habits and lifestyle of undergraduate medical students for designing specific health interventions based on the results of the study.

Methods: After obtaining permissions and written informed consent, the participants were interviewed and also asked to self-rate their stress on a scale of zero to nine. Their heights and weights were recorded.

Results: Lifestyle patterns of male (n=78) and female (n=94) respondents included vegetarianism (27.9%), skipping breakfast (13.95%), consuming four or more meals daily (61.63%), snacking between meals (43.02%), consumption of caffeinated soft drinks (38.37%) and tea/coffee (84.31%), sleeping for 6-8 hours daily (80.81%) with no gender difference in minimum and maximum sleep hours, lack of physical exercise (65.12%) or outdoor recreation (25.58%) and dominance of internet, television and computers as recreational tools. 60.46% studied only before exams. None were tobacco or alcohol habitual. 94.19% students had regular bowel habits and 68.03% had never suffered from constipation. Self-rated stress was often study-related and only 6.98% sought medical opinion for stress. Menstrual cycles in female respondents were irregular (14.89%), with mood changes (69.15%) and adversely affected studies (19.15%).

Conclusions: The same recreational tools utilized by the respondents can be deployed for educational interventions to modify the identified risk factors in this study.

Keywords: Lifestyle, Medical students, Diet, Stress

INTRODUCTION

A widespread perception is that medical students, being future physicians, would have healthier lifestyle and dietary habits as compared to their non-medical counterparts.

Studies have reported high prevalence of physical inactivity, mental stress, tobacco and alcohol use among a considerable proportion of medical students. Many medical students in the United Arab Emirates were aware that their diet was unhealthy. A majority of female

Chinese University students with low body mass index (BMI) indicated a desire to be thin. Unhealthy habits introduced during young adulthood usually persist in later life and can increase the risk of several chronic diseases. In a survey in a college population, 36% respondents revealed that time constraints posed a barrier to adoption of healthy practices. Initiation of unhealthy behaviours in medical students may be ascribed to peer pressure, mental stress, performance anxiety in a competitive academic environment, socio-cultural adjustment problems, inadequate parental supervision, home sickness after leaving their parental homes, and

greater financial autonomy as compared to their earlier years.

Since their behaviours are amenable to change, studentship is particularly the right period for educational interventions regarding the importance of developing and maintaining healthy behaviours.¹⁰

Interventions to improve the health and lifestyle of medical students would facilitate reduction of their own health risks and would also benefit their future patients because physicians with healthy lifestyles are more likely to inculcate similar behaviours in their patients.¹¹

The present study was carried to assess the dietary habits and lifestyle of undergraduate medical students in a metropolitan teaching hospital in order to design specific interventions based on the results of the study.

METHODS

This complete-enumeration, descriptive study was conducted in 2015 in a municipal medical college in Kalwa, Thane (located about 30 kilometres from Mumbai city). After obtaining permissions from the Institutional Ethics Committee (IEC) and institutional authorities, the purpose of the study was explained to students enrolled for the Bachelor of Medicine, Bachelor of Surgery (MBBS) course and written informed consent was taken from those willing to participate in the study.

The respondents were interviewed by a single observer using a pre-tested semi-structured proforma and were asked to grade their own stress on a scale of zero to nine. For the purpose of this study, a self-rated scale of zero was considered as "stress-free", 1-3 as "low-level stress", 4-7 as "moderate-level stress" and 8-9 as "high-level stress".

Height was measured in centimetres with a scale marked on a vertical wall, with the subject standing in erect position without shoes or headgear with head in Frankfort plane, feet together, heels, buttocks and upper part of the back touching the scale. ¹²

Body weight was measured in kilograms using a precalibrated digital weighing scale (OMRON Healthcare India Pvt. Ltd., Gurgaon, Haryana) with the subject standing evenly on both feet, wearing normal indoor clothing but without footwear and before lunch. 12

Body Mass Index (BMI) was calculated using the formula - weight (in kilograms) / [height (in metres)]². BMI value of 25 or more was taken as the cut-off point for defining overweight in both males and females.¹³

Categorical data were presented as frequencies and percentages and continuous data as Mean and Standard deviation (SD). Significance of difference in parameters was calculated by Karl Pearson's Chi Square test at 95% confidence interval (p<0.05).

EpiInfo Version 7.0 (public domain software package from the Centers for Disease Control and Prevention, Atlanta, GA, USA) was used for calculating the Chi Square test (with Yates' correction where applicable) and Odds Ratio (OR).

RESULTS

A total of 172 students (94 females and 78 males) participated in the study. The median age was 20 years with a SD of 1.49 years (males) and 20 years with a SD of 1.45 years (female). The median, first quartile (Q_1) , and third quartile (Q_3) were the same for males and females but males had a wider age-range (Figure 1).

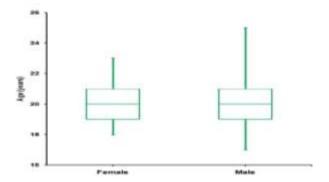


Figure 1: Box plot depicting age-distribution.

Anthropometry

The median height was 165 cm with a SD of 10.01 cm; median weight was 58 kg with a SD of 11.21 kg. The median heights of males and females were 167 cm and 152.65 cm, respectively (Figure 2). The minimum weight was the same in both sexes but Q_1 , Median, Q_3 and maximum weight was more in males (Figure 3).

The median BMI was 21.09 with a SD of 4.6. The minimum BMI of males was lower than that of females but Q_1 , Median, Q_3 and maximum BMI was higher in males (Figure 4).

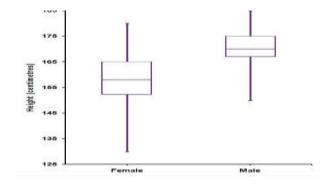
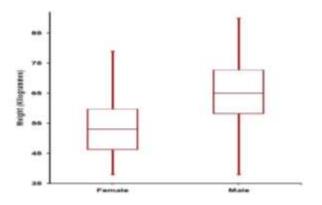


Figure 2: Box plot showing heights of respondents.



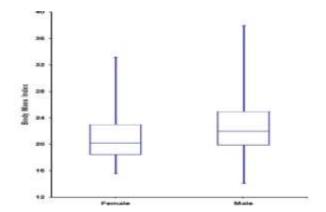


Figure 3: Box plot showing weights of respondents.

Figure 4: Box plot - body mass index.

Table 1: Pattern of food and beverage consumption.

Parameter		Females	(n = 94)	Males	(n = 78)	Chi ²	p value
		No.	%	No.	%	Value	
Type of diet	Regularly non-veg	24	13.95	17	9.88	6.39	0.093
	Vegetarian	32	18.60	16	9.30		
	Vegetarian + eggs	11	6.40	17	9.88		
	Rarely non-veg	27	15.70	28	16.28		
Meals per day	Breakfast	82	47.67	66	38.37	0.332	0.961
	Mid-Morning	20	11.63	14	8.14		
	Lunch	88	51.16	73	42.44		
	Evening	68	39.53	55	31.98		
	Dinner	92	53.49	74	43.02		
Eating Between	Daily	9	5.23	16	9.30	4.648	0.098
Meals	Sometimes	70	40.7	48	27.91		
	Never	15	8.72	14	8.14	_	
Consumption:	Daily	2	1.16	5	2.91	4.214	0.122
Caffeinated soft	Sometimes	71	41.28	63	36.62		
drinks	Never	21	12.21	10	5.81	_	
Consumption:	Daily	0	0.00	4	2.33	5.44	0.066
Coffee/Tea	Never	3	1.74	4	2.33		
	Sometimes	91	52.91	70	40.7	_	

Table 2: Dietary pattern, physical activities and body mass index (BMI).

Parameter	BMI: <25 (n = 142)	BMI: $25 + (n = 30)$	Chi ² Value	p value	Odds Ratio
Three or more meals per day	52	40	10.74	0.001 #	0.325
Never eating between meals	21	8	2.492	0.114	0.4773
Frequently eating between meals	17	8	4.305	0.038 #	0.374
Only vegetarian	39	9	0.079	0.778	0.883
Regular non-vegetarian	34	7	0.005	0.943	0.967
Gymnasium workouts - Never	98	14	5.445	0.0196#	2.545
Gymnasium workouts - frequent	9	6	5.807	0.0159#	0.2707
No outdoor activity	32	12	3.968	0.046#	0.436
Frequent outdoor activity	9	2	0.118	0.73	0.947

statistically significant.

Food habits

27.9% were vegetarians while 23.83% regularly consumed non-vegetarian diet. 61.63% had four or more

meals per day; 43.02% ate between meals on a daily or frequent basis. Frequency of regular breakfast, lunch and dinner was 86.05%, 93.6%, and 96.51%, respectively. Regular consumption of caffeinated soft drinks and tea or

coffee was reported by 38.37% and 84.31%, respectively (Tables 1-3).

Sleep pattern

80.81% students slept for 6-8 hours per day. 55.82% slept once a day without waking in between. Only 17.45% students had regular daytime naps (Table 4). There was

no gender difference in minimum and maximum sleep hours.

There was no difference between [minimum & Q_1] and [median & Q_3] in males and no difference in [Q_1 & median] in females indicating fixed similar hours of sleep in many students (Figure 5).

Table 3: Gender-wise dietary pattern and physical activities.

Parameter	Females (n = 94)	Males (n = 78)	Chi ² Value	p value	Odds Ratio
Three or more meals per day	33	33	0.935	0.334	0.737
Never eating between meals	15	14	0.127	0.728	0.868
Frequently eating between meals	9	16	4.105	0.043 #	0.410
Only vegetarian	32	16	3.878	0.049 #	2.00
Regular non-vegetarian	24	17	0.327	0.567	1.23
Gymnasium workouts - never	72	40	46.456	0.0000#	16.2
Gymnasium workouts - frequent	3	12	3.213	0.073	0.273
No outdoor activity	31	18	8.874	0.003 #	2.78
Frequent outdoor activity	0	6	3.437	0.063	•••

[#] statistically significant.

Table 4: Sleep patterns.

Sleep patterns		Female	Females (n = 94)		(n = 78)	Chi² Value	p value
		No.	%	No.	%		
Duration of sleep (hours)	6-8	80	46.51	59	34.30	2.46	0.117
	9-12	14	8.14	19	11.05		
Wakes up during sleep	No	49	28.49	47	27.33	1.80	0.406
	Sometimes	33	19.19	20	11.63		
	Yes	12	6.98	11	6.40		
Daytime naps	Daily	12	6.98	18	10.47	3.331	0.189
	Sometimes	66	38.38	50	29.07		
	Never	16	9.30	10	5.81		

Table 5: Physical activity.

		Females (n = 94)		Males (n	Males (n = 78)		p value
		No.	%	No.	%		
Physical activity	Irregular	38	22.09	33	19.19	0.062	0.802
	Regular	56	32.56	45	26.16		
Frequency of outdoor	Daily	4	2.33	7	4.07	1.907	0.385
games	Sometimes	67	38.95	50	29.07		
	Never	23	13.37	21	12.21		
Frequency of indoor	Daily	0	0.00	6	3.49	8.728	0.013 #
games	Sometimes	63	36.63	54	31.4		
	Never	31	18.02	18	10.47		
Frequency of going to	Daily	3	1.74	12	6.98	14.266	0.0008#
gym	Sometimes	19	11.04	26	15.12		
	Never	72	41.86	40	23.26	-	

[#] statistically significant.

Physical activity

8.72% exercised in the gymnasium daily while 65.12% students never did so (Tables 2-5).

Recreation

58.72% had a regular recreation pattern while 25.58% never had any outdoor recreation. 41.24% regularly

watched television and 88.96% regularly surfed the internet (Table 6).

Study pattern

2.90% students had regular study pattern, 36.62% studied irregularly while 60.46% studied only before exams.

48.25% preferred studying at night and 88.38% preferred a sitting posture while studying. 84.30% preferred to study alone (Table 7).

Addictions

None of the respondents in this study were habitual users of tobacco or alcohol.

Table 6: Pattern of recreation.

Pattern of recreation		Females (Females (n = 94)		Males (n = 78)		p value
		No.	%	No.	%	Value	
Television	Daily	42	24.42	29	16.86	1.162	0.559
	Sometimes	37	21.52	33	19.18		
	Never	15	8.72	16	9.30		
Computer	Daily	32	18.60	22	12.79	1.253	0.534
	Sometimes	46	26.75	38	22.1		
	Never	16	9.30	18	10.47		
Internet	Daily	83	48.26	70	40.70	1.518	0.468
	Sometimes	11	6.39	7	4.07		
	Never	0	0.00	1	0.58	-	

Table 7: Study pattern.

Pattern of studying		Female	Females (n = 94)		s (n = 78)	Chi ² Value	p value
		No.	%	No.	%		
Regularity	Regular	3	1.74	2	1.16	2.30	0.316
	Irregular	39	22.67	24	13.95		
	Only during exams	52	30.23	52	30.23		
Time of Study	Morning	24	13.95	7	4.07	9.302	0.025 #
	Evening	19	11.05	14	8.14		
	Night	38	22.09	45	26.16		
	Others	13	7.56	12	6.98		
Posture while	Sitting	83	48.26	69	40.12	0.023	0.988
studying	Sleeping	10	5.81	8	4.65		
	Walking	1	0.58	1	0.58	•	
Study Company	Alone	81	47.09	64	37.21	0.546	0.46
	With Others	13	7.56	14	8.14		

statistically significant

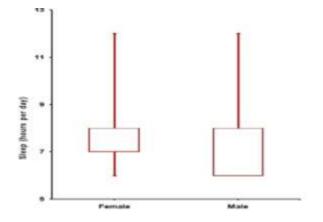


Figure 5: Box plot - daily hours of sleep.

Bowel habits

94.19% students had regular bowel habits and 68.03% had never suffered from constipation. 3.19% of the females and 8.97% of the males had irregular bowel habits.

1.06% of females and 2.56% of males often had constipation.

Stress

The frequency of moderate and high degree of self-rated stress was 56.39% and 12.80%, respectively. The

reported causes of stress were studies (93.02%) and non-academic reasons (6.98%).

33.72% responded that stress adversely affected their studies. For 51.74% students, exercise was a stress-buster. 6.98% had taken medical opinion for stress management (Table 8).

Menstrual pattern

Female students reported irregular menses (14.89%), bleeding for more than five days (21.28%), heavy bleeding (14.89%), passage of clots (52.13%), mood changes (69.15%) and adverse effect of menstrual problems on their studies (19.15%).

Table 8: Stress.

Parameters		Females	Females (n = 94)		: 78)	Chi ²	p value
		No.	%	No.	%	Value	
Stress levels	0 ("stress-free")	5	2.91	6	3.49	3.56	0.312
	1-3 ("low")	19	11.05	23	13.37		
	4-7 ("moderate")	59	34.30	38	22.09		
	8-9 ("high")	11	6.40	11	6.40		
Reasons for stress	Studies	89	51.74	71	41.28	0.877	0.348
	Others	5	2.91	7	4.07		
Stress affecting	Never	13	7.56	20	11.63	4.22	0.121
studies	Sometimes	49	28.49	32	18.60		
	Yes	32	18.60	26	15.12		
Methods for relieving	Exercise	52	30.23	37	21.51	3.707	0.294
stress	Family, friends	16	9.30	9	5.23		
	Sleep	13	7.56	17	9.88	_	
	Others	13	7.55	15	8.72		
Medical opinion	No	87	50.58	73	42.44	0.07	0.79
	Yes	7	4.07	5	2.91		

DISCUSSION

Of the total 172 respondents, all were aged between 17 and 25 years. In a longitudinal study among Turkish university nursing students, lifestyle habits were found to change from the beginning to the end of nursing training.¹⁴

Anthropometry

17.44% had BMI of 25 or more and 4.07% had BMI more than 30. Students residing outside the campus were more likely to be obese as compared to their campus-residing counterparts. In a Greece-based study, 32.1% of male and 8.4% of female medical students were overweight. 14.8% and 5.2% Malaysian medical students were found to be overweight and obese, respectively. In 16.17

Food habits

13.95% skipped breakfast while 19.77% students had a mid-morning snack. The difference between obesity rate amongst vegetarian students and others was insignificant (p=0.728) and that amongst non-vegetarian students and others was also insignificant (p=0.943). However, there was significant difference (p=0.001) in obesity rate amongst those eating three or more meals per day and those who did not. Similarly, the difference in obesity rate amongst those always eating between regular meals

and those who did not was also significant (p=0.038). In the Goteberg adolescent study, irregular breakfast habit was found to be related to smoking and a lower micronutrient intake.¹⁸

Healthy eating was more frequent among female Greek students but they had less physical activity as compared to their male counterparts. Swedish female university students were found to have healthier habits despite being more prone to stress, while their male counterparts were found to have a higher prevalence of obesity, physical inactivity and alcohol consumption. ²⁰

Sleep pattern

In this study, almost all respondents slept for more than 6 hours per day. A Japanese study reported significant gender differences in sleep pattern with an evening preponderance with shortened sleep duration during school days.²¹

Physical activity

The obesity rate was significantly higher (p=0.0196) among students who never exercised, as compared to their physically active counterparts. The frequency of going to the gymnasium was significantly higher (p=0.0008) amongst males. The obesity rate amongst

those regularly visiting the gymnasium was significantly lower (p=0.015) than that in the others.

In a Korean study, only 33.6% of the student's exercised daily. Physical activity showed a significant association with healthy eating patterns suggesting that healthful behaviours occurred together. A Spanish study has recommended nutritional education campaigns that include promotion of physical activity practice are needed to improve the overall health status of this population. States of the states of

Recreation

The frequency of playing indoor games was significantly higher (p=0.013) amongst males. Females with no outdoor recreation significantly outnumbered their male counterparts (p=0.003). In a Mangalore-based study, majority of the participants were introduced to junk food by television commercials and only 18.02% of the students never watched television. 24

Study pattern

Most respondents (95.34%) had fixed study timings but there was a significant gender difference (p=0.025) in the study pattern. A Japanese study reported that morning study preference was associated with higher sleep drive and better sleep-wake parameters and lifestyle habits; while evening study preference was associated with longer sleep latency, curtailed sleep duration and spells of daytime sleepiness.²¹

Addictions

In the present study, none of the respondents were habituated to tobacco or alcohol. Ten percent of surveyed American college-going women reportedly smoked to control their weight. ²² Smokers also had higher alcohol consumption. In a study among Spanish university students, one-third admitted to using illegal substances. ²⁵ One-third of British medical students consumed alcohol above safe limits and 65% of them were aware of the dangers. ²⁶ The rate of binge drinking was reported to be 32% among German medical students. ²⁷

Bowel habits

In the present study, only 2.91% students often suffered from constipation while 5.81% students had irregular bowel habits. However, a Korean study reported that 58.4% students had irregular bowel movements.²⁸

Stress

Only 6.4% students responded that they were stress-free and majority responded that studies were the cause of stress which, in turn, adversely affected studies. An Australian study has reported an overall enhancement in

wellbeing of medical students during the pre-exam period after a de-stressing programme.²⁹

Menstrual pattern

Majority of the female students had regular menstrual pattern with 4-5 days of bleeding and moderate flow but menstruation adversely affected studies. A Saudi Arabian study has attributed low class attendance of female medical students to dysmenorrhoea and premenstrual syndrome. The limitations are that this study was conducted in only one institution and it was not possible to verify the self-reported data provided by the respondents. The findings of a larger multi-centric study would help in formulating educational and health promotion interventions for undergraduate medical students.

CONCLUSION

This study reveals presence of various modifiable risk factors, such as obesity, unhealthy diet and irregular eating habits, physical inactivity and stress among the respondents. These risk factors are amenable to educational and health promotion interventions. Since recreation in this study group was dominated by computer, television and the internet, these very tools can be used judiciously to impart educational interventions on lifestyle modification.

Funding: No funding sources Conflict of interest: None declared

Ethical approval: The study was approved by the

Institutional Ethics Committee

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Cite this article as: Patel PH, Malgaonkar AA, Kartikeyan S. Cross-sectional descriptive study of lifestyle patterns of undergraduate medical students in a metropolitan Medical College. Int J Community Med Public Health 2016;3:2866-73.