Students' Corner

Knowledge and practice of healthy lifestyle and dietary habits in medical and non-medical students of Karachi, Pakistan

Rubina A. Sajwani,[1] Sana Shoukat,[2] Rushna Raza,[3] Muhammad Muhyeuddin Shiekh,[4] Quratulain Rashid,[5] Momin Saulat Siddique,[6] Sukaina Panju,[7] Hasan Raza,[8] Sophia Chaudhry,[9] Masood Kadir[10]

Medical Student,[1-9] Associate Professor,[10] Department of Community Health Sciences, The Aga Khan University, Karachi, Pakistan.

Abstract

Objective: To objectively compare the differences in knowledge and practices regarding healthy lifestyle among medical and non-medical students of Karachi along with assessment of any perceived barriers.

Methods: This cross-sectional study included 350 students between ages 17-24 years from 6 private universities of Karachi — three medical and three non-medical Institutions. A self-reported questionnaire was employed to assess attitude and barriers to healthy practices among the simple random selection of students.

Results: On a 10-point scale, the average knowledge score of students on general and clinical nutritional knowledge was 5.7 ± 1.51 and 4.4 ± 1.77, respectively and the difference was statistically significant ($p<0.01$). Conversely the diet and lifestyle score (85- point scale) among medical (41.3) and non medical students (40.8) was not significant ($p =0.646$). There was no difference between the perception of medical and non-medical students regarding 'work-related stress' in their life. 'Lack of time' was cited as the most important reason for skipping meals and as a barrier to exercising regularly among both groups.

Conclusion: The knowledge, attitudes and practices of medical students in Karachi suggest that superior knowledge about healthy lifestyle does not necessarily result into better practices (JPMA 59:650; 2009).

Introduction

The burden of non-communicable diseases is increasing globally and poses a major public health concern, a large part of which is preventable. These diseases have been strongly associated with unhealthy lifestyle habits, including inappropriate nutrition, lack of exercise, smoking, alcohol consumption, caffeine overuse and improper sleeping habits.[1,2] Inappropriate nutrition and inactivity increase the risk of diabetes, osteoporosis, obesity and cardiovascular diseases.[3] Unhealthy sleeping habits and addictions contribute to risk of developing the above mentioned non communicable diseases.

Although behaviours of students are considered a temporary part of college life, however, unhealthy habits picked up at this level generally persist in adult life.[4] College life is an important stage for individuals as at this time their behaviours are conducive to change. University and college arenas, therefore, represent an important opportunity for health and nutritional education. Sakamaki et al.[5] conducted a study on Chinese university students showing that only a small number of students (7%) apply the concept of healthy dietary intake when selecting food. However, a majority (51%) showed a desire to learn about healthy diet. A similar study on Swedish university students showed that females had healthier habits despite being more prone to stress. Male students on the other hand had high level of obesity and were less interested in nutritional advice, health enhancing activities, were also physically inactive and indulged in alcohol consumption.[6]

College life is also a period during which individuals are for the most part exposed to stress and lack of time, posing a barrier to adoption of healthy practices. In a survey about habits and perceived barriers to following a healthy lifestyle in a college population, the biggest deterrent to exercise and bad eating habits was "lack of time" (36%).[3]

Amongst this college population, it is assumed that the medical students have a greater knowledge about healthy lifestyle and dietary habits when compared to non-medical students. However there is no evidence to indicate that this knowledge translates into practices in terms of

maintaining good health. Healthy dietary habits among medical students are even more important as they are future physicians and the students who personally ignore adopting healthy lifestyle are more likely to fail to establish health promotion opportunities for their patients. Also, medical students have been shown to exhibit early risk factors for chronic diseases.[5]

Various studies have been focused on assessment of knowledge and practices regarding nutrition, exercise, sleeping habits, smoking and alcohol among medical students. In a Japanese study, almost half of the dental students missed one of the three main meals.[7] In another cross sectional survey in UAE, a large percentage of medical students were found to be either underweight or obese and most believed that their activity levels were insufficient, stress levels too high and their diet unhealthy.[8] Studies also report lack of appropriate physical activity and prevalence of unhealthy habits like smoking and alcohol among a large proportion of medical students.[5,9]

Additionally, medical students face a lot of the barriers mentioned earlier which prevent them from practicing healthy habits despite being equipped with knowledge. A local study on the medical students of the Aga Khan University showed that majority (> 90%) of the students thought that they had been stressed at one time or another which affected not only their academic performances but also all aspects of health.[10]

The aim of the study was to compare the knowledge and practices of medical and non-medical students regarding a healthy lifestyle and to determine the barriers each group faces in following a healthy lifestyle.

Methods

A cross-sectional study was conducted among the university students of Karachi, Pakistan between the period September to November, 2006. Three medical and three non-medical universities were selected (the names of which have not been mentioned for the sake of confidentiality). Permission was taken from the departmental ethics committee to conduct this study.

We included consenting medical and non- medical students of these universities between ages seventeen and twenty four. University students with a clinically diagnosed chronic illness or on a prescribed medication and those outside the age bracket were excluded and of course those who declined to take part in the study. Sample size was calculated keeping a power of 80% and Type I error at 0.05 which came out to be 240. However, a total 318 students were surveyed, of which 162 were non-medical students and 152 medical students.

A self reported questionnaire was designed incorporating relevant questions from several studies.[3,11-13] There were a total of 56 questions, broadly divided into four categories of demographics, lifestyle practices, dietary practices and knowledge assessment about healthy diet and life style habits. Questions assessing attitude and barriers to healthy practices were included in lifestyle and diet sections.

Scoring systems were developed with the purpose of comparison between the two study groups. One system was to quantify knowledge about healthy diet and lifestyle practices of both subgroups and the other compared dietary and lifestyle habits. Twenty questions regarding dietary habits were marked and cumulative scores were calculated. Maximum score attainable was 80 and minimum was 3 providing a wide range for comparison. Knowledge score was based on ten questions with each correct answer given a score of 1 and maximum score that could be achieved being 10. Four questions each, were used to assess attitude and barriers faced by each subgroup and these were not scored.

Results

Characteristics of the sample and BMI:

A total of 156 (48.8 %) medical and 162 (50.6%) non medical students participated in the study. The response rate was 97.0% (320 / 330). The mean age for medical and non-medical student subgroups was 21.5 ± 1.33 years and 20.7 ± 1.31 years respectively. The percentage of male and female participants was approximately equal in the two categories (50.3% and 49.7% respectively) (Table-1). The mean BMI of

Table-1: Demographic features of university students participating in the study.

S. No.	Parameter	Medical students (n=156)	Non-medical students (n=162)	Total (n=318)
1	**Age (years)**			
	Mean	21.5 ± 1.33	20.7 ± 1.31	21.1 ± 1.37
2	**Sex**			
	Male	73	86	159
	Female	81	76	157
3	**Current year of study**			
	Mode	4th year (94)	3rd year (53)	-
4	**B.M.I. (kg/m2)**			
	Mean	22.3 ± 3.65	21.6 ± 4.12	22 ± 3.9

both groups were within normal range (18-25) with BMI of medical students being 22.3 ± 3.65 kg/m2 and that of non-medical students 21.6 ± 4.12 kg/m2. However, about 15.9% of the total population had BMI in the overweight category (> 25) and the proportion of overweight students was approximately equal in both groups (18.2% and 17.1% respectively). This data was based on self-reported height and weight.

Life style and eating habits:

The lifestyle and eating habits of students were assessed with questions regarding the type of food intake (individual food items were mentioned to explicate conscious decision of consuming healthy vs. unhealthy foodstuff), exercising habits (e.g. number of hours spent, types of exercise performed) and sleeping habits (e.g. number of hours during the daytime and nighttime). Less than half (48.8%) of the students reported having three meals a day, 35.6% of the rest took two meals out of which breakfast was the most commonly missed meal, followed by lunch among both groups.

Dietary and lifestyle habits were compared using a scoring system as mentioned in the Methods section of the report. The mean diet and lifestyle score (out of 80) of medical students (41.3± 9.39) versus non medical students (40.8 ± 9.12) was not significantly different when the means were compared using independent T-test (p =0.646). This demonstrated that there were no differences in type of food intake (healthy vs. unhealthy), amount of meals taken, or exercising habits among the two groups.

However, when looking at each food items individually there were significant differences between the score for 'milk' consumption- medical students scoring lower (2.4) than non-medical students (2.8), and for the score for fast-food - medical students consuming more fast food as compared to non-medical students. After the assessment of all the individual practices it was found that none of the diet and lifestyle practices were better among medical students as compared to non-medical, although medical students were worse off with a few of them smoking (12.9% of medical students smoked vs. 10.6% of non-medical students) though the difference was not significant.

On the other hand, we found significant difference (p= .014) in the diet and lifestyle scores of male and female subjects. Female students (mean score = 42.4 ± 9.38) were far better in terms of lifestyle practices as compared to male students (mean score= 39.7 ± 8.96).

Greater number of medical students believed that university life has affected their health for better (25.2%) or

Table-2: Barriers to healthy lifestyle.

Perceived Barriers	Med. Students % (n)	Non- Med students % (n)	P value
(a) Skipping meals			
No time	52.3% (81)	57.1% (92)	0.43
Lack of Accessibility	41.9% (13)	58.1% (18)	0.4
Not in the habit	55.2% (48)	44.8% (39)	0.18
Weight Control	51.6% (16)	48.4% (15)	0.56
Other	32.1% (9)	67.8% (19)	0.11
(b) Healthy dietary Habits			
Lack of time	49.7% (77)	58.4% (94)	0.12
Lack of motivation	23.2% (36)	26.7% (43)	0.48
Lack of knowledge	1.3% (2)	11.8% (19)	P< 0.01
Stress	25.2% (39)	24.8% (40)	0.95
Financial reasons	3.9% (6)	3.7% (6)	0.95
Taste preference	43.9% (68)	40.4% (65)	0.53
Lack of accessibility	17.4% (27)	11.9% (19)	0.16
My dietary habits are healthy enough	18.7% (29)	15.0% (24)	0.37
(c) Exercise			
Lack of time	58.7% (91)	65.8% (106)	0.19
Lack of Motivation	27.1% (42)	24.2% (39)	0.56
Lack of facility	5.2% (8)	13.0% (21)	0.015
No barriers	1.9% (3)	4.3% (7)	0.07
(d) Healthy lifestyle choices			
Work related Stress	42.3% (66)	44.4% (71)	0.57
Poor time management	42.9% (67)	50.6% (81)	0.17
Friends and company	28.8% (45)	20.0% (32)	0.07
Media influences	5.1% (8)	8.1% (13)	0.29
Depression	12.8% (20)	13.1% (21)	0.55

worse (39.4%) compared to 46.6% non medical students who reported 'no change' in their overall health. The overall perception of the effect of university life on health among medical and non medical was significantly different (p= 0.007) the basis of which is discussed further in the next section.

Majority of the students (69.1%) reported their lifestyle to be moderately stressful, however, there was no difference between the perception of medical and non-medical students regarding stress in their life. Most of the students (41.7%) reported an increase in caffeine intake after joining their respective institutions.

Barriers to healthy practice:

Medical students did not consciously make an extra effort to choose a healthier lifestyle (e. g. by restricting salt, sugar, spice and fat) or to eat healthy food (i.e. by reading food labels) as the scores and t- test results failed to show any difference. 'lack of time' alone was identified as the most important reason for skipping meals, to eating a healthier diet and to practice regular exercise among both groups. Other than that, 'poor time management' was the most commonly cited factor preventing achievement of a healthier lifestyle among university students. There were no differences regarding independent perceived barriers among the two groups (Table 2).

Knowledge of healthy practices:

Knowledge concerning nutrition among students was measured using a set of 10 questions each bearing 1 point each. Independent sample T test indicated that the mean knowledge scores were significantly different between the medical (mean =5.69 ± 1.85) and non medical (mean=4.39 ± 1.92) students (P < 0.01). A very high number of medical students (35.2%) scored above 6 compared to only 14.4% of non medical students. A very interesting, yet, commonsense association was found between knowledge score and BMI. People with normal BMI had significantly better knowledge score (p< 0.01). The knowledge scores of medical (5.7 ± 1.85) and non medical (4.4 ± 1.92) students were significantly different (p<0.01), however the dietary and lifestyle practices reflected by diet and lifestyle scores of medical students (41.3%) were similar to non-medical students (40.8%) (Table-3).

Table-3: Comparison of Knowledge and diet scores.

	Medical students	Non-medical students	p value
1. Knowledge Mean scores Good knowledge*	5.7	4.4	<0.01
2. Dietary habits**	41.3	40.8	0.52

* Score of 6 or above; Maximum score 10
** Maximum score 80.

Discussion

The results showed that medical students had a superior level of knowledge on health issues regarding diet, lifestyle and exercise. This is attributable to the fact that they were enrolled in a five-year health sciences program (M.B.B.S.) and since a large proportion of the medical students were from the fourth and final year of MBBS, they had completed studying the basic health sciences. On the other hand, all the non-medical universities had students enrolled in information technology and business management sciences courses where little about health and diet is taught.

Even though medical students scored higher in the knowledge questionnaire, no significant difference was found among medical and non-medical students when asked if they made an effort to eat healthy foods. There is a lack of health consciousness amongst the general student population. This also has been observed in other studies where students were practicing unhealthy dietary habits and made inappropriate choices in hypothetical scenarios.[4,7,8,11,13]

We found no significant difference in the diet and lifestyle habits of the two subgroups. Keeping in view the result that medical students had a greater know-how on health issues and their implications, it may be concluded that they are not putting knowledge into practice due to certain barriers. The two main barriers identified by the participants of this study were lack of time and stress. Medical students in their 3rd, 4th and final year have to attend all-night calls at least once per week, or stay up late, studying leading to sleep deficits. Most medical students do not get time to exercise and eat healthier meals due to the demands of their studies and clinical rotations in the respective wards. Hence medical students are unable to translate knowledge into better practices due to the above mentioned barriers. This is supported by the finding that more medical students perceive that their institutions have affected (both positively and negatively) their health and lifestyle as compared to most of non-medical students who reported little change in this regard. Conversely, on the non-medical side, lack of knowledge was identified as an additional, significant barrier. This was consistent with Silliman et al.[4] with lack of time seen as the most important reason for not having healthy eating habits, and for skipping meals, exercising irregularly. While, in non medical students, the most important cause was lack of sleep.

The finding that there is a large proportion of university students who perceive their lifestyles to be moderately or highly stressful might be linked to lack of proper time management. Several of the unhealthy lifestyle choices including lack of sleep may be linked to this high

level of perceived stress. Students from a local university showed high perceived stress levels among medical students that supports this hypothesis.[10] Course designers who design the educational activities in these institutions need to keep these results in view. It would be more appropriate (health-wise) if institutions took measures to ensure that adequate time is made available to students for meals, exercise, sleep and the workload on their students is not excessive.

Short courses on nutrition to non-medical students can also be offered as an adjunct to their basic curricula as more of the non-medical students, identify lack of knowledge as a barrier to healthier practices. Experimental studies that aim to do so have been performed in similar population in the West and have yielded promising results in terms of improved practices.[4] Similar studies leading to development of interventions could be very useful in universities of Pakistan.

Alternatively, students might not be properly managing the time that is available, as reflected in the fact that half of medical students and over forty-percent of non-medical students reported "Poor time management" as the most significant barrier that they face in following a healthier lifestyle. This highlights the importance of developing interventions that focus on improving time management skills in students. Further studies, focused specifically on the effects of these barriers which need to be conducted in the student population to come up with workable solutions.

The skipping of breakfast, which was common in the population assessed by this study, is a very unhealthy practice that should be discouraged in university students who are in their habit forming years. Skipping breakfast has been associated with lower nutritional status and an increased risk of developing cardiovascular diseases in the future.[14] It has also been reported that less adequate breakfast habits may contribute to obesity.[13]

Males were more likely to be overweight while a large proportion of females were under weight. A study limitation was that BMI was calculated from self-reported values. This self reporting may indicate that women tend to desire to be thinner, express anxiety about becoming fat, and are more likely to diet than men.[5,15,16] In contrast, men have reported a desire for a heavier physique and muscularity and tend to be less careful about their weights.[17]

A large number of students from both subgroups reported an increase in caffeine intake after joining their current universities. High caffeine intake in adolescents has been linked with difficulty in sleeping, feeling tired in the morning and with high blood pressure.[18,19] Measures should be taken to educate students on the harmful effects of caffeine consumption in an effort to curtail this habit.

This was a cross-sectional study comparing two demographically similar groups (medical vs. non-medical students). One of the limitations was the difference in mean age in two sub-groups (medical and non-medical) of 0.75 year. Due to a large sample size, this difference turned out to be statistically significant. However this difference is still small and should not have too much of an effect on the comparative results. Another limitation was that the scoring system for knowledge, attitude and practice was self-devised.

Conclusion

The knowledge, attitudes and practices of medical students in Karachi suggest that superior knowledge about healthy lifestyle does not necessarily result into better practices.

References

1. Eyre H, Kahn R, Robertson RM. Preventing cancer, cardiovascular disease, and diabetes: a common agenda for the American Cancer Society, the American Diabetes Association, and the American Heart Association. Diabetes care 2004; 27: 1812-24.
2. Ignarro LJ, Balestrieri ML, Napoli C. Nutrition, physical activity, and cardiovascular disease: an update. Cardiovasc Res 2007; 73: 326-40.
3. Webb E, Ashton CH, Kelly P, Kamah F. An update on British medical students' lifestyles. Med Educ 1998; 32: 325-31.
4. Silliman K, Rodas-Fortier K, Neyman M. A Survey of Dietary and Exercise Habits and Perceived Barriers to Following a Healthy Lifestyle in a College Population. Californian J Health Promot 2004; 18: 281.
5. Sakamaki R, Toyama K, Amamoto R, Liu CJ, Shinfuku N. Nutritional knowledge, food habits and health attitude of Chinese university students--a cross sectional study. Nutr J 2005; 4: 4.
6. von Bothmer MI, Fridlund B. Gender differences in health habits and in motivation for a healthy lifestyle among Swedish university students. Nurs Health Sci 2005; 7: 107-18.
7. Motoko A, Kayoko S, Keiko E, Keiko K, Naomi Y, Yoko K. [The relationship among eating habits, lifestyles, and oral health status of students]. Kokubyo Gakkai Zasshi 2002; 69: 290-5.
8. Carter AO, Elzubeir M, Abdulrazzaq YM, Revel AD, Townsend A. Health and lifestyle needs assessment of medical students in the United Arab Emirates. Med Teac 2003; 25: 492-6.
9. Troyer D, Ullrich IH, Yeater RA, Hopewell R. Physical activity and condition, dietary habits, and serum lipids in second-year medical students. J Am Coll Nutr 1990; 9: 303-7.
10. Shaikh BT, Kahloon A, Kazmi M, Khalid H, Nawaz K, Khan N, et al. Students, stress and coping strategies: a case of Pakistani medical school. Educ Health (Abingdon) 2004; 17: 346-53.
11. Kelleher C, Nic Gabhainn S, Friel S, Corrigan H, Nolan G, Sixsmith J, et al. The National Health and Lifestyle Surveys: Survey of Lifestyle, Attitudes and Nutrition (SLÁN 2002) and the Irish Health Behaviour in School-Aged Children Survey (HBSC). 2003. (Online) 2002. Available from URL: http://www.nuigaluay.ie/hbsc/documents/hbsc_2006_english_version.pdf.
12. Lindmark U, Stegmayr B, Nilsson B, Lindahl B, Johansson I. Food selection associated with sense of coherence in adults. Nutr Jo 2005; 4: 9.
13. Ortega RM, Redondo MR, Lopez-Sobaler AM, Quintas ME, Zamora MJ, Andres P, et al. Associations between obesity, breakfast-time food habits and intake of energy and nutrients in a group of elderly Madrid residents. J Am Coll Nutr 1996; 15: 65-72.
14. Sakata K, Matumura Y, Yoshimura N, Tamaki J, Hashimoto T, Oguri S, et al. [Relationship between skipping breakfast and cardiovascular disease risk

factors in the national nutrition survey data]. Nippon Koshu Eisei Zasshi 2001; 48: 837-41.

15. Cash TF, Brown TA. Body image in anorexia nervosa and bulimia nervosa. A review of the literature. Behav Modifi 1987; 11: 487-521.
16. Smith BL, Handley P, Eldredge DA. Sex differences in exercise motivation and body-image satisfaction among college students. Percept Mot Skills 1998; 86: 723-32.
17. Pope HG Jr, Gruber AJ, Mangweth B, Bureau B, deCol C, Jouvent R, et al. Body image perception among men in three countries. Am J Psychiatry 2000; 157: 1297-301.
18. Orbeta RL, Overpeck MD, Ramcharran D, Kogan MD, Ledsky R. High caffeine intake in adolescents: associations with difficulty sleeping and feeling tired in the morning. J Adolesc Health 2006; 38: 451-3.
19. Savoca MR, MacKey ML, Evans CD, Wilson M, Ludwig DA, Harshfield GA. Association of ambulatory blood pressure and dietary caffeine in adolescents. Am J Hypertens 2005; 18: 116-20.