Available online at http://www.journalcra.com

International Journal of Current Research
Vol. 6, Issue, 06, pp.7180-7182, June, 2014

INTERNATIONAL JOURNAL OF CURRENT RESEARCH

ISSN: 0975-833X

RESEARCHARTICLE

BODY FAT COMPOSITION IN COLLEGE STUDENTS: COMPARISON OF FEMALE MEDICAL AND NON-MEDICAL STUDENTS IN NEPAL

***Amatya, M.**

Department of Physiology, Nepal Medical College, Kathmandu, Nepal

ARTICLE INFO

Article History:
Received 14th March, 2014
Received in revised form
24th April, 2014
Accepted 16th May, 2014
Published online 25th June, 2014

Key words:
Body mass index,
College students,
Medical,
Non-medical,
Nepal.

ABSTRACT

Background: Medical students, especially females, face more stress than non-medical students. This could alter their lifestyle and body fat composition. Whether Nepalese female medical students differ significantly from their non-medical counterparts regarding body fat composition is explored.
Methods: Body mass index (BMI) of female medical and non-medical students from four private colleges of Nepal were calculated from measured height and weight. Participants were in first, second, and third years of medical, business sciences, and fashion designing courses. Groups were compared by Chi square test.
Results: Of the total 278 students (174 medical, 104 non-medical), mean age in completed years of medical students was significantly less than non-medical (19.49±1.04 vs 20.36±1.51, p=0.000) but differences in height, weight, and BMI were not statistically significant. Differences in BMI were not significant also within groups in the students of different years of study. Almost one-fourth students (23.4%) were underweight and 5% were overweight but none were obese.
Conclusion: Prevalence of overweight and obesity is low among female Nepalese college students. Level of stress may be more in medical students, but this was not evident in BMI of the students.

INTRODUCTION

Problem of overweight and obesity has been recognized as public health problem worldwide due to the fact that it increases the risk of several disorders such as hypertension, coronary artery disease and stroke, respiratory effects, arthritis, psychological effects, and some cancers (Haslam and James, 2005). Overweight and obesity is an excessive amount of body fat; it is usually expressed by body mass index (BMI) which is calculated by dividing the weight of an individual in kilograms (Kg) by his/her height given in meter square (m^2) (James *et al*, 2001). Changes in lifestyle and physical activity as well as dietary habits, stress, and socio-cultural environment are reflected in the body fat compos\ [p [;ition i.e., body mass index (BMI) (Sundquist and Johansson, 1998). The ideal body weight of individual would be a BMI between 18.5 to 24.9 kg/m^2; BMI $\geq$ 25 kg/m^2 would be considered as overweight and BMI $\geq$ 30 kg/m^2 would be considered as obese (WHO, 2000).The burden of overweight and obesity is very high among developed countries such as USA (Flagel*et al*, 1998). Recently, obesity incidence is increasing even in the developing countries like Nepal (Vaidya*et al*, 2010). Besides the general population, prevalence of overweight and obesity is also reported to be rising among medical students (Zafar*et al*, 2007; Boo *et al*, 2010; Gopalkrishnan*et al*, 2012; Selvaraj and Sivaprakashan, 2013). Medical students are the future doctors and role models of the society, whose lifestyle and health conditions are highly valued by the general public in the country. Medical courses and time schedules are regarded to be more demanding and challenging than non-medical courses. As a result, medical students are known to be involved in less physical activity and more sedentary life style; this may be reflected in their body fat composition. There is paucity of published work about the body fat composition status of Nepalese medical students as well as non-medical college students. Our one previous study had revealed a moderate prevalence of overweight and obesity in Nepalese medical students (Amatya*et al*, 2014). Whether the Nepalese medical students are different from their non-medical counterparts regarding body fat composition is not yet explored and is the aim of this study.

MATERIALS AND METHODS

A cross sectional analytical study was conducted from November, 2013 to January, 2014 in four private colleges of Nepal – two medical and two non-medical. The medical course (MBBS) as well as all the non-medical courses (bachelor courses in fashion designing, BFD and business sciences, BBS) are four or more years' programs. Data was collected from consenting college students in first year through fourth year of study. Students having recent history of fever, gastrointestinal disorders, metabolic and endocrine disorders, or any other

Corresponding author:Amatya, M.
Department of Physiology, Nepal Medical College, Kathmandu, Nepal

Table 1. Distribution of students in different years of study in medical and non-medical groups

Year of study	Program of study					
	Medical		Non-medical		Total	
	Count	%	Count	%	Count	%
1	69	39.7%	40	38.5%	109	39.21
2	50	28.7%	34	32.7%	84	30.22
3	55	31.6%	30	28.8%	85	30.58
Total	174	100.0%	104	100.0%	278	100

therefore, were excluded from the study due to the lack of comparison. Thus, a total 278 girls were considered for the study, 174 studying medical program and 104 studying non-medical programs. First year students comprised most number of students in either category (Table 1). Means of age in years completed, height, weight, and body mass index of the students were compared (Table 2). Differences in height, weight, and BMI were not significant between the groups while age difference was very highly significant.

Table 2. Comparison of mean age, height, weight, and body mass index of students

Program of study		Age of students***	Height in meters	Weight in kilograms	Body mass index
Medical	Mean	19.49	1.5732	49.9195	20.1667
(n=174)	Std. Deviation	1.041	.05510	5.58532	2.35358
non-medical	Mean	20.36	1.5618	48.9519	20.0806
(n=104)	Std. Deviation	1.513	.05862	5.34332	2.35783
Total	Mean	19.81	1.5690	49.5576	20.1345
(n=278)	Std. Deviation	1.306	.05661	5.50634	2.35128
P values for difference between groups (combined) ANOVA table		.000	.105	.157	.768

Table 3. Distribution of BMI categories in medical and non-medical groups through first, second, and third years of study

Program of study	Obesity category by WHO	Year of study						Total	
		1		2		3			
		Count	%	Count	%	Count	%	Count	%
Medical	Underweight	15	21.7	15	30.0	14	25.5	44	25.3
	Normal	49	71.0	32	64.0	40	72.7	121	69.5
	Overweight	5	7.2	3	6.0	1	1.8	9	5.2
	Total	69	39.7	50	28.7	55	31.6	174	100.0
Non-medical	Underweight	12	30.0	6	17.6	3	10.0	21	20.2
	Normal	27	67.5	27	79.4	24	80.0	78	75.0
	Overweight	1	2.5	1	2.9	3	10.0	5	4.8
	Total	40	38.5	34	32.7	30	28.8	104	100.0
Total	Underweight	27	24.8	21	25.0	17	20.0	65	23.4
	Normal	76	69.7	59	70.2	64	75.3	199	71.6
	Overweight	6	5.5	4	4.8	4	4.7	14	5.0
	Obese	0	0.0	0	0.0	0	0.0	0	0.0
Grand total		109	39.2	84	30.2	85	30.6	278	100.0

medical condition likely to have affected their body weight were excluded from the study.Weight was measured on weight scale to the nearest 0.5 kg while wearing minimal comfortable clothes. Height was measured by standing the student without shoes erect against a wall-mounted height scale to the nearest 0.5 cm. Body mass index (BMI) was calculated as weight of the individual in kilograms (kg) divided by the square of height in meters (m^2). The procedure did not include any potential risk to the participants. Based on the BMI, students were grouped into four categories as recommended by the WHO: underweight (BMI<18.5), normal (BMI range 18.5-24.9), overweight (BMI range 25-29.9), and obese (BMI≥30) (WHO, 2000).Data entry, calculations, and presentation were done on the software Microsoft Excel 2007. Software SPSS 11.5 was used for statistical analysis. Means, standard deviations, and frequency tables were used for the analysis of variables. Group characteristics and BMI values between groups were compared by ANOVA and Chi square tests, respectively. Level of significance was set at p values 0.05 or less.

RESULTS

Total 292 female students initially participated in the study, 104 studying non-medical courses and 188 studying medical course through different years. Fourteen medical students but none of the non-medical students were in the fourth year and Female medical students were younger than their non-medical counterparts on the average.In either group, distribution of BMI categories in first, second, and third years was explored (Table 3). In both medical and non-medical groups, majority of the students had normal BMI in all the years. Almost one fourth of the students were underweight while none were obese (hence, not shown in the table). Frequency distribution of underweight, normal, and overweight were almost identical among the medical and non-medical students in total while the difference in distribution year wise was not shown to be statistically significant when Chi-squared.

DISCUSSION

All four colleges were private colleges; three in Kathmandu – the capital city, and one outside of Kathmandu. Male students participated in less numbers than female students; especially fewer in the non-medical group. Hence, this study compared only the female college students in medical and non-medical courses, leaving out the male participants due to the lack of comparison. Students in first, second, and third years of their respective courses were included; their number distribution were comparable. Medical students were significantly younger than non-medical students (mean age years of medical students 19.49±1.04 vs 20.36±1.51 in non-medical students, p value 0.000) whereas height and weight differences were not

significant. By the WHO recommended categorization, majority of students (71.6%) were normal by BMI categorization while almost one fourth (23.4%) were underweight.Only 5% of the students were overweight but none were obese. Mean BMI distribution and BMI categories (underweight, normal, and overweight) in the two groups were comparable in total as well as year-wise. Distribution of categories for BMI was different through the years in both groups but statistical significance could not be proven in either group. A fairly high rate of overweight and obesity among female medical students, more than 10% prevalence for overweight, have been reported by most studies done in Asian students (Selvaraj and Sivaprakashan, 2013; Mahmood *et al*, 2013; El-Qudah *et al*, 2012). We had reported lower prevalence of overweight and obesity among Nepalese female medical students (Amatya *et al*, 2014).

Stress is stated to be highly prevalent, especially in females, among medical college students (Sani *et al*, 2012; Sohail N, 2013). This has been suggested to be linked to long hours of study, examinations, and very tight time schedules associated with the medical courses (Gupta *et al*, 2009). Body mass index of college students has been shown to be positively correlated with level of stress (MohdSaat *et al*, 2010; Hoe *et al*, 2012). In this regard, BMI among female medical students may be more in comparison to non-medical female students. Such comparative study has not been reported. This study compared the BMI of female medical and non-medical students of four private colleges in Nepal. Significant difference in BMI was not evident between the groups overall as well as within the groups in different years of study.

Conclusion

Prevalence rate of overweight and obesity is low among female college students of Nepal. Although medical courses are considered to be more stressful and therefore expected to influence the lifestyle of medical students, that was not evident in the body mass index of the students in this study.

REFERENCES

Amatya M, Khanal B, Yadav SR. 2014. Body mass index of Nepalese medical students: a cross-sectional study. *International Journal of Development Research*, 4(3):746-748.

Boo NY, Chia GJQ, Chew W, loo RCN. 2010. The prevalence of obesity among clinical students in a Malaysian medical school. *Singapore Med J*, 51(2):126-132.

El-Qudah JM, Al-Omran H, Abu-Alsoud B, Al-ShekYousef TOI. 2012. Nutritional status among a sample of Saudi college students. *Curr Res J Biol Sci*, 4(5):557-562.

Flagel KM, Caroll MD, Kuczmarski RJ, Johnson Cl. 1998. Overweight and obesity in the United States 1960-1994.*International Journal of Obesity and related Metabolic Disorders*, 22:39-47.

Gopalkrishnan S, Ganeshkumar P, Prakash MVS, Christopher AV. 2012.Prevalence of overweight / obesity among the medical students, Malaysia.*MedJj Malaysia*, 67(4):442-444.

Gupta S, Ray TG, Saha I. 2009. Overweight, obesity and influence of stress on body weight among undergraduate medical students. *Indian Journal of Community Medicine*, 34(3):255-257. doi:10.4103/0970-0218.55596.

Haslam DW, James, WP. 2005. Obesity. *Lancet*, 366:1197-1209.

Hoe DC, Wah CK, Rian CA, Eliza Au E, Goud BK, Kamath U. 2012. Stress manifestations of medical students and its relation with gender and life style changes. *Int Med J Stud Res*,2:37-45.

James ML, Donald CY, Josheph AR, Ronald MD. 2001. Obesity: assessment and management in primary care. *AmFam Physician*, 63:2185-2197.

Mahmood S, Perveen T, Najjad M, Yousuf N, Ahmed F, Ali N. 2013. Overweight and obesity among medical students of public sector's institutes of Karachi, Pakistan.*J ObesWt Loss Ther*.,3(1):157. DOI: 10.4172/216507904.1000157.

MohdSaat NZ, Ishak I, Lubis SH, *et al*. 2010. Stress and its relationship with body mass index among biomedical science students in Kuala Lumpur, Malaysia. *ASEAN journal of Psychiatry*, 11(2).

Sani M, Mahfouz MS, Bani I, *et al*. 2012.Prevalence of stress among medical students in Jizan University, Kingdom of Saudi Arabia.*Gulf Medical Journal*, 1(1):19-25.

Selvaraj K, Sivaprakasam P. 2013. A study on the prevalence of overweight and obesity among medical students of Kanchipuram District.*NJRCM*, 2(2):140-144.

Sohail N. 2013. Stress and academic performance among medical students.*Journal of the College of Physicians and Surgeons Pakistan*, 23(1):67-71.

Sundquist J, Johansson SE. 1998. The influence of socioeconomic status, ethnicity and lifestyle on body mass index in a longitudinal study.*International Journal of Epidemiology*, 27:57-63.

Vaidya A, Shakya S, Krettek A. 2010. Obesity prevalence in Nepal: public health challenges in a low-income nation during an alarming worldwide trend. *Int J Environ Res Public Health*, 7:2726-2744.

World Health Organization. 2000. Obesity: preventing and managing the global epidemic. Report on a WHO consultation. *Technical Report Series No 894*, World Health Organization: Geneva, Switzerland.

Zafar SH, Haque I, Butt AR, *et al*. 2007. Relationship of body mass index and waist to hip ratio measurement with hypertension in young adult medical students.*Pak J Med Sci*, 23(4):574-579.

****