Review article

Study of Vital Capacity Relation To BMI In 1st year Medical Students

Abstract

Overweight and other problems due to increasing weighti.e increased BMI are looked forward as an "epidemic shoot up" having a massive effect on each and every country in the world nevertheless it being developed or developing. Obesity is related to a huge range of devitalizing, enervating and lethal issues which include circulatory, vascular, cardio respiratory, metabolic, and different non-transferable diseases. Apart from the contribution of these elements the increment in BMI, the irregularity in eating regimen, lack of exercise and addiction as a result of traumatic situations in which stress, mental health appears to play acrucialrole, therefore it's being taken into consideration as an unbiased component for increment in BMI by everyone. During the training period students of the medical school are prone to a varied variety of stress. Therefore, to discover the prevalence of obese and increased BMI problems amongst the undergraduate students of the medical school, this observation is being carried out.

Purpose:
To determine the prevalence of obese and increased BMI problems amongst medical students and its relation with vital capacity. Additionally, to discover the connection of the subsequent threat factors with increased BMI: (a) lacking exercise, (b) sleep pattern, (c) dietary regime, (d) mental health (trauma, stress), and (e) unison of varied variety of diseases (thyroid issues, menstrual problems).

Procedure:
Amongst hundred students an elaborate cross-sectional study was carried out in the Physiology Department. After taking the consent of the hundred students these facts have been gathered by using pretested questionnaires. These students' height and weight were precisely taken and the calculation of their BMI was done carefully.

Results:
Of these100 medical school students, the mean ± standard deviation, height was 1.67 ± 0.09 metres (m), and the mean weight was 66.61 ± 12.71 kilograms (kg) and the mean BMI was 23.54 ± 3.09 kg/m2. A normal BMI was observed in 73.1%of the MBBS students, whereas 22.3% of them were over weight, 3.1% were obese, and only, 1.5% were underweight. Corpulent and increased BMI was observed drastically greater in boys than girls.

Inference:
The recent studies offer a concept about excessive occurrence of corpulence and obesity within them edical school students. Consciousness and intrigue are to benecessarily created concerninga healthy diet regime and a weight controlling frame work amongst the doctor population in future. Dietary nutrition training on food and ingestion practices and existence

alternations to the way of living ought to be constructed in and as for assisting academic interest through entire schooling years.

Key words:
Corpulent, obesity, body mass index, vital capacity, medical students.

Introduction

The growth of non-communicable disease is burdening the globe and posing to bea prime concern to general well-being of people, a massive component of which is avoidable.[1]In general the burden of non-communicable diseases and cardiovascular disease, in particular, is greatly attributed within creased BMI problems throughout the globe.[2]Obesity has somewhat plagued the world. In 2016, beyond 1.9 billion people, 18 years old and above, were found to be corpulent. Out of which, over 650 million were obese, 39% and 13% of the them, that aged 18 years suffered from obesity and severe obesity, respectively, in 2016.[3]Particularly the youth in low and middle in comed nations like India are more prone to immense chronic disease burden due to the swift in crement in in creasing BMI, as a result of ir relevant diet and inactive lifestyle, in the subsequent 10–20 years if no strict measure sare taken.[4] Obesity is increased body weight due to accumulation of fat in the body in abnormal proportion or huge amount. Obesity or overweight is generally defined by Body Mass Index (BMI). BMI is described as an in dividual's weight in kilograms divided by the square of height in meters (kg/m2). The WHO defines normal weight as a body mass index (BMI, kg/m2) of ≥18.5 to <25, overweight as a BMI of ≥25 to <30, and obesity as a BMI of ≥30.[5] For adolescents, an important stage for an individual is college life, as at the moment their behavior sare conducive to change.[6] However, they may also beex posed to stress sand shortage of time, posing a barrier to adoption of healthy practices[7] regardless of being geared up with knowledge. Hence, this study was undertaken to discover the prevalence of obese and increased BMI amongst undergraduate medical students.

In the current scenario, corpulence and increased weight have emerged as a global threat, and are attributed for changing the living standards not only irrespective of it being a developed or developing nation. Results of the research have been showing that 35% of people aged ≥20 yrs were reported to have increased body weight and 11% were reported to be corpulent in the year 2008. Thus, the corpulent or people with concern able increased body weight are yearly growing with the swift financial development and eating habit change in the year 2012, more than 40 million ≥5 years of age were reported to have critically increased weight or corpulent throughout the globe.

As everybody knows, Increased BMI is a prime health concern all over the globe. Corpulence and critical weight increment are tending to be a risk factor for non-transferable diseases as well as severe circulatory, vascular, respiratory disorders, such as high blood pressure, diabetes mellitus and elevated LDL levels, and is quite relatable toper turbation and death. Significance of controlled body weight and being fit should be highlighted for all sorts of prevention of lifestyle-related disorders and diseases i.e. primary and secondary type on a global scale.

Critically increasing weight along with decrease in pulmonary functions and life-style related problems should get a significance attention. Particularly, it is being suggested that obesity and restrictive pulmonary dysfunction are very closely related. Obesity has an impact on most of the clinical medicine fronts, inclusive of medicines for problem in lungs. However, the relation of obesity with asthma i.e. problem in breathing, reducing lungs volume and increase

in airway resistance could be debated upon as they simply tend toimitate asthma. Thus, it should be necessarily understood that the body mass index (BMI) and vital capacity (VC) are relatable. Till now, various previous surveys have described that increment in decreased body weight or BMI has a relation with the reducing vital capacity, and these statistic ssuggest that being fit i.e having to maintain appropriate weight of the body is quite necessary for the improvement in vital capacity. the maintenance of adequate body weight may be important for improving the vital capacity. (8)

Body

Procedure

In June, 2016 the Physiology Department carried out an elaborate cross-sectional survey. A hundred 1st year medical aspirants were together constituted for the contemplation of the same. Efforts had been done more than one time to contact the candidates including the students who were present on the day of study. One hundred college students were engaged with inside to take a look at the same. An already framed questionnaire was turned to gather and report facts on age, sex, height which was standardized in meters, and weight in kilograms, of all the subjects. With the use of general calibrated scales and a non-stretch tape, that was constant to a levelled vertical wall, closestto 0.1 kg and 0.5 cm, respectively the measurements of body weight and height were taken. For there duction of mistakes, the measurement scales had been inspected for precision via means of weighing an item of acknowledged weight. Calculation of BMI was done with the formula: weight (in kilograms)/height (in sq. metres). Using cutoff factor stailored from the WHO criteria, BMI < 18.49 kg/m2 turned into described underweight, 19 to approx. 25 kg/m2 normal, 25 to approx. 30 kg/m2 overweight, and ≥ 30 kg/m2 obese. The facts acquired had been compiled and analysed via means of the use of SPSS software, model 21.

Result

Out of 100, 62 boys and 38 girls participated in the survey. The students' mean age came out to be 21.8 ± 3.9 years. Out of 87 fathers and 65 mothers of the scholarshad been found to be corpulent. Past record of high blood pressure and diabetes was found in 50 and 60 mothers, respectively, while amongst the fathers of the scholars, high blood pressure and diabetes had been reported in 72 and 82 of them, respectively. A small count of the participants confirmed each of the following diseases. The imply ± standard deviation top of the scholars turned into 1.67 ± 0.09 m, the imply ± standard deviation in weight 66.61 ± 12.71 kgs, and the imply ± standard deviation in BMI 23.54 ± 3.09 kg/m2. As depicted general BMI percentage was displayed by majority of them (73.1%). 22.3% of them were considered to be overweight, obesity had a percentage of 3.1%, and underweight were considered to be 0.1%. Female students were perceived to be less obese and overweight than male students in association with the conducted survey. This aggregate was considered to be statistically relevant (p = 0.03).

Discussion

In the studies so far conducted, of the one hundred college students, 62had been boys and 38 girls in the college students. The suggested ± standard deviation top of the scholars become 1.67 ± 0.09 m, the suggested weight 66.61 ± 12.71 kg, and the suggested ± standard deviation BMI 23.54 ± 3.09 kg/m2. Most (73.1%) of them confirmed regular BMI, even though 22.3% of them had been obese, 3.1% overweight, and only, 1.5% underweight. The survey carried out amongst scientific college students in Greece found out a barely decreased and lowered down incidence of weight problems, which become 22%. This became attributed to loss of every day bodily activity and own circle of relatives that had records of weight problems.[9]

A considerable relation between weight problems/obesity and intake of junk meals became a set up towards a study carried out among st scientific college students of Malaysia. In their survey, the majority of weight problems came out to be 15.2% and that of over weightness was noted to be 21.8%. This accelerated incidence of obesity became attributed to their accelerated junk meal intake.[10] Deshpande et al[11] stated that most of the weight problems reported to be 29% amongst scientific undergraduate college students of Ujjain. Thakkar et al[12] stated that, in line with Revised Indian Guidelines, the majority of weight problems become 23% amongst university women in Agra District of Uttar Pradesh which may be in competence to our surveys held so far. Kotian et al[13] found out that the hazard of weight problems became in stances better than the various youngsters of excessive socioeconomic class. In the study conducted, one hundred college students participated, of which 62had been male and 38 had been female college students, although from the survey of the medical school students achieved with the aid of Min has et al[14] 222 stated that (28%) had been males and 570 (72%) had been females. The average age group of the individuals participating in this session became 21.8 ± 3.9yrs[15]. However, the overview achieved with the aid of using A garwal et al[16] in MMAC, Delhi, comprised young individuals. A suggested ± standard deviation (SD) BMI of 23.54 ± 3.09 kg/m2 became stated, better than the sooner stated studies[14,17]. Today's survey described relatively extra college going population (73.1%) displaying regular BMI than the prior stated works [1,17]. The noteworthy observation of Boo et al[18] on scholars from the scientific university of Malaysia, stated that 69% of college students confirmed to have a regular BMI. The incidence of underweight became quite low (1.5%), opposite to the reviews received with the aid of Kumar et al[1] (20.1%) and Mani[16] (10%) via their observations. The normal incidence of obese and over weight were reported to be as 22.3% and 3.1%, respectively, which were much like the effects of the scrutiny with the aid of Mani[17]. Although Gupta et al[19] stated a comparable incidence of weight problems via their examination, the variety of obese college students had been lesser. Chaya and Jadav[20] had carried out the survey in diverse and comparable population, have stated a better percentage of underweight (13.6%) and weight problems (25.6%), when collated with the scrutinises. In our examinations, obese & weight problems were found to be extra in boys than the within side girls i.e the female college students; the commentary become analytically relevant ($p = 0.03$) &similar with the preceding observations.

On the other way around the survey which had been achieved with the aid of Lakshmi and Devi[21] most of the college students of Tirupati aspiring for medical stream stated no difference based on the gender, where as Hamid et al[22] in their scrutiny, described the female college students being obese to a greater extent than many of the college students of Skims Medical College. As compared with the latter studies[14] closest circle of relatives had records of weight problems in all of the figures were found in many college students (moms 87 and fathers 65); similarly, a lot of them had confirmed that the closest circle of relative’s records of diabetes or high blood pressure or both. Strength and limitations: As we take a look at examination per formed in university college students, who are destined to be physicians as it's far and quite a lot critical that they may privy to growing weight problems as this may affect the outlook of patients. This scrutiny was performed in a hundred medical college students. It has become endorsed to conduct a study in a bigger and wide raspect. Recall and non-reaction bias might have been surpassed by the scholars while answering the questionnaire, which warrants in additional research. [23-30]

Conclusion

This survey highlights the reality that advanced knowledge which is approximated to a whole some nutritional behaviour now no longer exists and always end into higher practices. Programmes that specialize in enhancing time controlling competencies of college students are essential. They should be encouraged and thrived to take part in bodily exercises, especially sports, athletics, and different activities which can be conducted outdoors. Further studies which are to be undertaken to raise awareness of neo-obstacles amongst the medical students in training whole some nutritional demands and essential outcomes associated with them and further come up with potential solutions. Improvement in nutritionalin take and conductance, if made in early years of clinical schooling, could produce physicians training and selling a complete procured nutritional conductance and positive outcomes. Nutrition training is needed such as counselling on skipping food and intake of junk.

A strict action on abolishment of corpulence or increased BMI should be taken because of the above-mentioned issues and additionally, detrimental effects on lung volume and capacity in observed in adolescents i.e college going medical aspirants, mostly by decreasing functional residual capacity, vital capacity, expiratory reserve volume and residual volume. The maximum amount of air that could be inspired or expired in the course of a respiratory cycle is the calculation or estimation of vital capacity (VC). It is the sum total of the expiratory reserve volume (ERV), tidal volume (TV), and inspiratory reserve volume(IRV) i.e. ERV + TV + IRV = VC. The inspiratory capacity (IC) is the sum total of the air that could be inspired after the end of a normal expiration. It is, therefore, the sum of the tidal volume and inspiratory reserve volume. The total lung capacity (TLC) is the measurement of the total air that could be held by the lungs. It is the sum of the residual volume(RV), expiratory reserve volume (ERV), tidal volume(TV), and inspiratory reserve volume (IRV). Millilitres (ml) is the unit of vital capacity. Body composition is inclusive of fat in the body, fat of the muscles, bone presumption, moisture of the body, proteins, intracellular and extracellular fluids, percentage of body fat, ratio of muscle volume, fat areas of the viscera, fat of the viscera, fat content, ratio of waist & hip, basal metabolism, metabolism of energy, swelling index, muscle of the trunk, the total sum of the muscles of the upper extremity of the left side, weight; mass of the lower limb muscle of the left side, muscles of the upper extremity of the right side, mass of the muscles of the lower limb, fat of the trunk, ratio of fat of the trunk, fat of the muscle of the upper extremity of the left side, upper limb and lower limb fat of the left side, fat; fat of leg of the left side, Volume of fat of the upper extremity of the right side, percentage of fat of the upper extremity of right side and mass of fat of the lower extremity of the right side, which got measured by analysis of tetra polar bioelectrical impedance (In Body 3.0, Bio space, Seoul, Korea).

References

1. Kumar CA, Revannasiddaiah N, Gopi A, Nanjundappa VH. A cross-sectional study on the dietary factors and their association with body mass index among undergraduate medical students in a medical college. Int J Res Health Sci 2014;2(2):591–8.

2. Yusuf S, Hawken S, Ounpuu S, Dans T, Avezum A, Lanas F, et al. Effect of potentially modifiable risk factors associated with myocardial infarction in 52 countries (the INTERHEART study): A case–control study. Lancet 2004;364(9438):937–52.

3. World Health Organization. Obesity and Overweight (Fact Sheet). Geneva: World Health Organization. Obesity and Overweight (Fact Sheet), 2015. Available at: http://www.who.int/mediacentre/ factsheets/fs311/en/index.html (last accessed on April 12, 2015).

4. Misra A, Vikram NK. Insulin resistance syndrome (metabolic syndrome) and obesity in Asian Indians: Evidence and implications. Nutrition 2004;20:482–91.

5. WHO Available at: www.who.int/mediacentre/factsheets/fs311/ en/index.html Accessed 2012, April 12.

6. Sajwani AR, Shoukat S, Raza R, Sheikh MM, Rashid Q, Siddique MS, et al. Knowledge and practice of healthy lifestyle and dietary habits in medical and non-medical students of Karachi, Pakistan. J Pak Med Assoc 2009;59(9):650–5.

7. Webb E, Ashton CH, Kelly P, Kamah F. An update on British medical students' lifestyles. J Med Educ 1998;32:325–31.

8. Liu P, Ye Z, Lu H, Lu J, Huang L, Gong J, et al. Association between body mass index (BMI) and vital capacity of college students of Zhuang nationality in China: a cross-section study. Oncotarget. 2017 Sep 8;8(46):80923–33.

9. Bertsias G, Mammas I, Linardakis M, Kafatos A. Overweight and obesity in relation to cardiovascular disease risk factors among medical students in Crete, Greece. BMC Public Health 2003;3:3.

10. Gopalakrishnan S, Ganeshkumar P, Prakash MV, Christopher, Amalraj V. Prevalence of overweight/obesity among the medical students, Malaysia. Med J Malaysia 2012;67(4):442–4.

11. Deshpande K, Patel S, Bhujade R, Deepak P. Lifestyle and obesity among medical college students in Ujjain, India. Natl J Community Med 2013;4(2):291–3.

12. Thakkar HK, Misra SK, Gupta SC. Prevalence of obesity among college girls in Agra District of U.P. Indian J Community Health 2009–2010;21(2)–22(1):61–4.

13. Kotian MS, Kumar GS, Kotian SS. Prevalence and determinants of overweight and obesity among adolescent school children of south Karnataka, India. Indian J Community Med 2010;35(1):176–8.

14. Minhas HT, Anis D, Jawaid A, Naeem H, Naz M, Zuberi BF. Estimation of body mass index in students of a public sector medical college in Pakistan. Pak J Med Sci 2010;26(4):918–22.

15. Sheikh NH, Haider A, Khan FF, Khan FS, Humayun A. Bodymass index and its associated factors in young medical students. Biomedica 2014;30(4):284–8.

16. Agarwal S, Bhalla P, Kaur S, Babbar R. Effect of body mass index on physical self-concept, cognition and academic performance of first year medical students. Indian J Med Res. 2013; 138(4):515–22.

17. Mani G. Assessment of body mass index and its associated nutritional factors among undergraduate medical students in Tamil Nadu, India: A cross-sectional study. J Pioneer Med Sci 2014;4(3):137–42.

18. Boo NY, Chia GJ, Wong LC, Chew RM, Chong W, Loo RC. The prevalence of obesity among clinical students in a Malaysian medical school. Singapore Med J 2010;51(2):126–32.

19. Gupta S, Ray TG, Saha I. Overweight, obesity and influence of stress on body weight among undergraduate medical students. Indian J Community Med 2009;34(3):255–7.

20. Chaya S, Jadav P. Dietary and lifestyle pattern in relation to overweight and obesity among the medical and nursing students. Indian J Res Rep Med Sci 2012;2(3):9–12.

21. Lakshmi Y, Devi BV. A study of body mass index among medical students in a tertiary care teaching hospital. IOSR J Dent Med Sci (IOSR-JDMS) 2015;14(3):14–7.

22. Hamid S, Rashid AF, Najeeb Q. Estimation of body mass index (BMI) in first year medical students of Skims Medical College, Bemina. Int J Sci Res 2015;4(1):2654–7.

23. Keche, Harsha Atul, Preeti Prabhakar Thute, Ujwal Lehandas Gajbe, Atul Shankarrao Keche, and Darshna Gulabrao Fulmali. “Cadaveric Oath - Perceptions of First Year Medical Students.” JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 37 (September 14, 2020): 2722–25. https://doi.org/10.14260/jemds/2020/591.
24. Muley, Parikshit Ashok, Karan Ramyank Thakkar, Praveen Kanaram Gehlot, Ashok Jaykumar Vankudre, Pranjali Parikshit Muley, and Pradip Bhanudas Barde. “Association between Body Mass Index and Cognitive Functions in Medical Students.” JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH 14, no. 11 (November 2020): CC8–14. https://doi.org/10.7860/JCDR/2020/45081.14256.
25. Ukey, Ujwala Uttamrao, Suwarna Sande, and Sarita Kulbhushan Sharma. “Emotional Intelligence and Academic Performance of Final Year (7th Semester) Medical Students.” JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS 9, no. 40 (October 5, 2020): 2955–59. https://doi.org/10.14260/jemds/2020/648.
26. Balwani, Manish, Amit Pasari, Feroz Aziz, Mohan Patel, Vivek Kute, Pankaj Shah, and Manoj Gumber. “Knowledge Regarding Brain Death and Organ Donation Laws Among Medical Students.” TRANSPLANTATION 102, no. 7 (July 2018): S812. https://doi.org/10.1097/01.tp.0000543851.64997.1b.

27. Gajbhiye, Varsha, Yeshwant Lamture, and Shivangi Ghidiyal. “Nutritional Anaemia among Medical Students and Its Correlation with Body Mass Index.” JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH 14, no. 1 (January 2020): PC1–2. https://doi.org/10.7860/JCDR/2020/42858.13401.
28. Rathi, Anurag, Ramdas Sarjerao Ransing, Kshiord Kumar Mishra, and Neena Narula. “Quality of Sleep among Medical Students: Relationship with Personality Traits.” JOURNAL OF CLINICAL AND DIAGNOSTIC RESEARCH 12, no. 9 (September 2018): VC1–4. https://doi.org/10.7860/JCDR/2018/24685.12025.
29. Pawar P, Tirpude S, Parwe S, Nisargandha M. Study on Prevalence of Hyperlipidemia among Medical Students in Wardha District - A study Protocol. JOURNAL OF PHARMACEUTICAL RESEARCH INTERNATIONAL. 2021;33(31A):70–5.
30. Thute PP, Vagha SJ. Role of Undergraduate Medical Students in Designing Teaching Module in Anatomy for Effective Learning. JOURNAL OF EVOLUTION OF MEDICAL AND DENTAL SCIENCES-JEMDS. 2021 Mar 8;10(10):729–34.