



A Cross-Sectional Study on Practise of Physical Activity Among Medical Students in Chennai

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Article History:

Received on: 19 Aug 2020

Revised on: 10 Sep 2020

Accepted on: 19 Sep 2020

Keywords:

BMI,
exercise,
obesity

ABSTRACT

As defined by the World Health Organisation (WHO), physical activity is any bodily movement produced by skeletal muscles that require energy expenditure. Physical activity is split into exercise and non-exercise physical activity. Physical inactivity is associated with many chronic and non-communicable diseases such as hypertension, type II diabetes mellitus, carcinoma and mental health problems. According to the global statistical report of WHO, around 1.6 million deaths occur annually, and these deaths can be attributed to insufficient physical activity. This study would aim to assess the practice of physical activity among medical students and to study the factors associated with physical activity. A cross-sectional study was conducted in a private medical college between January 2020 and March 2020, 444 undergraduate students were included in the study, among which 401 responses were considered valid. A standard international physical activity questionnaire (IPAQ) was used. The data were entered in Microsoft Excel and analysed using Pearson's chi-square test. The students belonged to 1st year 125(31.2%), 2nd year 128(31.9%), 3rd year 133(33.2%) and 4th year 15(3.7%). Majority of these students 233(58.1%) had an average Body Mass Index (BMI) and 184(45.9%) practised low level of physical activity. In comparison with the level of physical activity, batches(1st year, 2nd year, 3rd year, 4th year) and gender(males, females) were significant at $p < 0.05$, but BMI was not significant at $p < 0.05$. Comparing the level of physical activity with the BMI of the students, it can be concluded that the level of physical activity is not associated with BMI.

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ISSN: 0975-7538

DOI: <https://doi.org/10.26452/ijrps.v11i4.3299>

Production and Hosted by

IJRPS | www.ijrps.com

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INTRODUCTION

As defined by the World Health Organisation (WHO), physical activity is any bodily movement produced by skeletal muscles that require energy expenditure ([World Health Organization, 2004](#)). Physical activity is split into non-exercise physical activity which includes cooking, washing clothes, shopping, cleaning and physical activity based on exercise includes swimming, walking, jogging dancing, etc. Physical inactivity is the fourth most leading risk factor for global mortality ([World Health Organization, 2004](#)). Physical inactivity is associated with lots of chronic and non-communicable diseases such as hypertension, type II diabetes mellitus, car-

cinoma and mental health problems (Boopathirajan *et al.*, 2019). Insufficient physical activity can lead to reduced life expectancy. According to the global statistical report of WHO, around 1.6 million deaths occur annually, and these deaths can be attributed to insufficient physical activity (World Health Organization, 2014).

It is expected that college-going students will have a better understanding of the importance of physical activity, especially medical college students but physical inactivity is very much common among medical students. The reasons for physical inactivity may be stress, lack of time due to academic work and laziness. Usage of computers and other electronic gadgets like smartphones can also bring down the time spent on physical activity. According to a study conducted on college students, it was estimated that a single student spends 8 to 10 hours on their electronic gadgets per day (Penglee *et al.*, 2019).

The World Health Organization has recommended that adults between 18–64 years of age should engage in at least 150 minutes of moderate-intensity physical activity or at least 75 minutes of vigorous-intensity physical activity or an equivalent combination of moderate-intensity and vigorous-intensity physical activity per week for reduced risk of various diseases (World Health Organization, 2010). Medical students who are the future doctors should practice physical activity themselves so they can promote and educate the importance of the physical activity to other individuals.

This study would aim to assess the practice of physical activity among medical students and to study the factors associated with physical activity.

Methodology

Study Design

Cross-sectional study conducted from January 2020 to March 2020.

Study Area

The study was conducted in a private medical college in Chennai with adequate facilities for students to engage in physical activity.

Study Period

January 2020 to March 2020.

Sample Size and Sampling Method

444 undergraduate students were included in the study, among which 401 entries were considered valid.

All students from first-year MBBS, second-year MBBS, third-year MBBS and fourth-year MBBS were included in the study.

Study Tool and Data Collection

Data were collected by distributing questionnaires. A standard international physical activity questionnaire (IPAQ) was used (International Physical Activity Questionnaire, 2002). The questionnaire has been validated in Geneva and tested across 12 countries. The reason for using a standard international questionnaire is that it provides standard and reliable answers and leads to better understanding and comparison with other studies and areas. The questionnaire consists of 5 parts. Initially, demographic details such as age, year of study, place of upbringing, height and weight are collected. BMI (Body Mass Index) is calculated using the formula weight in kilograms/ height in meter², and the values are classified into underweight (<18.5), normal (18.5-24.9), overweight (25.0-29.9) and obese (greater than 30). Then Part 1 of the questionnaire deals with job-related physical activity; this does not include unpaid work done around the house. Part 2 of the questionnaire deals with the mode of transportation. Part 3 of the questionnaire deals with housework, house maintenance and caring for the family. Part 4 of the questionnaire deals with recreation, sports and leisure-time physical activity. Part 5 of the questionnaire deals with time spent sleeping. Each part consists of a few questions, and the time spent will be asked. Demographic details such as age, height, weight were collected. Body mass index (BMI) was calculated using the formula weight in kilograms/height in meter square. The metabolic activity value for each activity is prefixed, and the total metabolic value is calculated. According to the metabolic value, the participant is classified into low, moderate and high physical activity.

Data Analysis

The data were entered in Microsoft Excel and analysed using Pearson's chi-square test. Descriptive statistics of the socio-demographic details and level of physical activity were in the form of frequency and percentage. Chi-square test was used to find the association of level of physical activity with different batches, gender and BMI.

Ethical Clearance

Ethical approval was obtained from the Institutional Ethics Committee and Institutional Review Board. The students were informed and explained about the study, and written informed consent was obtained. The confidentiality of the participants will be maintained.

Table 1: Background characteristics of medical students

Variables	Males N(%)	Females N(%)	Total N(%)
Batches			
1st year	50(31.1)	75(31.3)	125(31.2)
2nd year	52(32.3)	76(31.6)	128(31.9)
3rd year	54(33.5)	79(32.9)	133(33.2)
4th year	5(3.1)	10(4.2)	15(3.7)
Place Of Upbringing			
India	149(92.5)	226(94.2)	375(93.5)
Abroad	12(7.5)	14(5.8)	26(6.5)
BMI			
<18.5 (underweight)	3(1.9)	25(10.4)	28(7)
18.5-24.9 (normal)	75(46.6)	158(65.9)	233(58.1)
25-29.9 (overweight)	63(39.1)	37(15.4)	100(25)
>30 (obese)	20(12.4)	20(8.3)	40(9.9)
Level Of Physical Activity			
Low	80(49.7)	104(43.3)	184(45.9)
Moderate	39(24.2)	97(40.4)	136(34)
High	42(26.1)	39(16.3)	81(20.1)

Table 2: Proportion of non-exercise physical activities and exercise physical activity, n=401

Activities	Yes N(%)	No N(%)	Total N(%)
Non-Exercise Physical Activity			
Cleaning the house	165(41.1)	236(58.9)	401(100)
Gardening	74(18.5)	327(81.5)	401(100)
Shopping	325(81)	76(19)	401(100)
Exercise Physical Activity			
Cycling	48(12)	353(88)	401(100)
Walking	218(54.4)	183(45.6)	401(100)
Badminton	59(14.7)	342(85.3)	401(100)
Aerobic exercises	115(28.7)	286(71.3)	401(100)

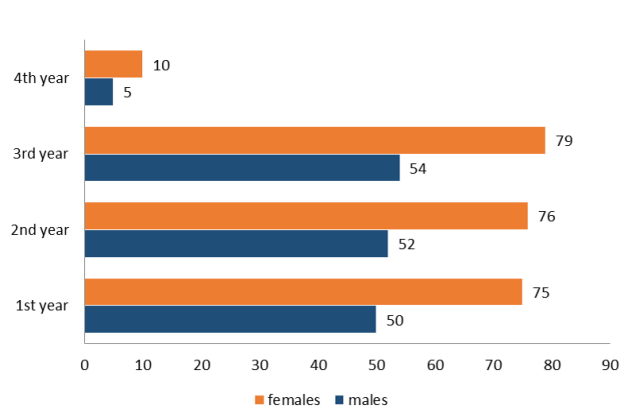


Figure 1: Distribution of Number of males and females in different batches

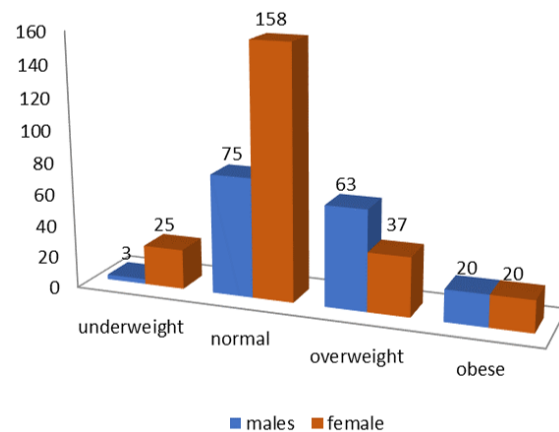
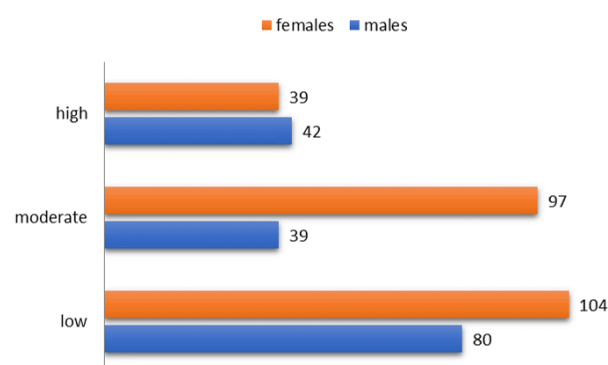


Figure 2: Number of males and females among different categories of BMI

Table 3: Association with the level of physical activity and Background characteristics

Variables	Level Of Physical Activity			Total(401) N	Chi-Square Value	P Value
	Low N(%)	Moderate N(%)	High N(%)			
Batches						
1st year	71(38.6)	29(21.3)	25(30.9)	125(31.2)	13.2043	0.0399
2nd year	53(28.8)	46(33.8)	29(35.7)	128(31.9)		
3rd year	52(28.3)	56(41.2)	25(30.9)	133(33.2)		
4th year	8(4.3)	5(3.7)	2(2.5)	15(3.7)		
Gender						
Male	80(43.5)	39(28.7)	42(51.9)	161(40.1)	12.9145	0.0015
Female	104(56.5)	97(71.3)	39(48.1)	240(59.9)		
BMI						
<18.5 (under-weight)	14(7.6)	10(7.4)	4(4.9)	28(7)	7.8899	0.2462
18.5-24.9 (normal)	114(62)	75(55.1)	44(54.3)	233(58.1)		
25-29.9 (over-weight)	37(20.1)	35(25.7)	28(34.6)	100(24.9)		
>30 (obese)	19(10.3)	16(11.8)	5(6.2)	40(10)		

**Figure 3: Number of males and females practising different levels of physical activity**

RESULTS AND DISCUSSION

This study included 401 undergraduate medical students, among whom males were 161(40.1%), and females were 240(59.9%) in number. The students belonged to 1st year 125(31.2%), 2nd year 128(31.9%), 3rd year 133(33.2%) and 4th year 15(3.7%) (Figure 1). Among them, 93.5% of students were brought up in India. The majority of these students 233(58.1%) had normal BMI (Body Mass Index), 100(25%) were overweight, 40(9.9%) were obese, and 28(7%) were underweight. (Figure 2). The majority of students 184(45.9%) practised low level of physical activity, 136(34%)

practised moderate level of physical activity, and 81(20.1%) practised high level of physical activity. The level of physical activity was compared between boys and girls, and it has been found that the practice of a high-level physical activity is higher among boys than in girls (26.1% vs 16.3%) (Figure 3, Table 1).

The physical activities are divided into non-exercise physical activity and exercise physical activity. In the non-exercise physical activity, 165(41.1%) was for cleaning the house, 74(18.5%) was for gardening, and 325(81%) was for shopping. In exercise physical activity, 48(12%) was for cycling, 218(54.4%) was for walking, 59(14.7%) was for badminton, and 115(28.7%) was for aerobic exercises (Table 2). In comparison with the level of physical activity, batches (1st year, 2nd year, 3rd year, 4th year) and gender (males, females) were significant at $p < 0.05$, but BMI was not significant at $p < 0.05$. It is observed that students with a BMI of more than 25 were physically more active than students with a BMI of less than 18.5 (Table 3). Around the world, the non-communicable disease is becoming a significant problem. This is due to rapid change in lifestyle, which leads to reduced physical activity, eating habits and increased tobacco and alcohol consumption. This trend is observed in many societies, developed and developing countries (Rao

et al., 2012). The practice of a physical activity is not only to reduce weight but also for physical fitness. A positive attitude towards physical activity is a must for medical professionals. In the global front, the fourth leading risk factor for mortality is physical inactivity (Rao *et al.*, 2012). The practise of physical activity has many therapeutic and preventive effects on health. In this current study majority of students had an average body mass index 233(58.1%), this was similar to another study conducted in India (Boopathirajan *et al.*, 2019; Rao *et al.*, 2012). The prevalence of overweight was 100(25%). This was similar to the study conducted by Rao *et al.* (Rao *et al.*, 2012). The prevalence of obesity was 40(9.9%), which was similar to the study conducted by Boopathirajan R *et al.* (Rao *et al.*, 2012).

According to this study majority number of students 184(45.9%) low practice level of physical activity, but a majority of students has normal BMI, so obesity is not related to the level of physical activity (Park, 2019). Obesity is a chronic disease and the most prevalent form of malnutrition (Park, 2019). Obesity is caused by changes in eating habits and other factors. Still, there is no proper study to compare the prevalence rates and the size of the problem because it is different in different countries. There are some limitations to the current study. They are, due to logistic constraints in obtaining measurements, students as stated the height and weight, the study was conducted in a single college, and the findings are limited to a single college student, the study was conducted at the beginning of the year which could have influenced the students as compared to the practice of physical activity at the end of the year. Though there is some limitation to the study, there is an unintentional positive aspect too, the students on filling the IPAQ questionnaire became more aware of their status of physical activity which can lead to improvement of physical activity among students. These types of study help in the primary prevention of obesity among students (Rao *et al.*, 2016).

CONCLUSIONS

The practice of a physical activity is important for maintaining physical fitness. Lack of physical activity is associated with lots of non-communicable diseases such as hypertension, diabetes mellitus. Practising the required amount of physical activity with proper diet and nutrition will help to control obesity. Obesity is a major chronic disease which is an epidemic around the world. In this study by using the International Physical Activity Questionnaire (IPAQ), the level of physical activity is mea-

sured using the metabolic values. The level of physical activity is divided into low, moderate and high physical activity. Comparing the level of physical activity with the BMI of the students, it can be concluded that the level of physical activity is not associated with BMI. Medical students should be given awareness of the benefits of practising physical activity, and the required facilities should be made available. They are giving proper education regarding physical activity help to promote a positive atmosphere to exercise and improve health.

Conflict of Interest

The authors declare that they have no conflict of interest for this study.

Funding Support

The authors declare that they have no funding support for this study.

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