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A Cross-sectional Study To Assess The Degree Of Physical Activity Practices Among MBBS Students In A Medical College, Puducherry

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Abstract

Background:

Regular physical activity is a proven method for preventing and managing non-communicable diseases (NCDs) such as heart disease, stroke, diabetes, and several types of cancer. The stress involved in becoming a physician may adversely affect students' exercise habits. Therefore, the current study aims to investigate the physical activity practices among undergraduate medical students & to determine the factors that motivate and hinder the practice of physical activity.

Methods: A cross-sectional study was conducted among 364 undergraduate medical students using a cluster sampling technique. The data was collected using a standardized questionnaire called the International Physical Activity Questionnaire (October 2002). Data entry and analysis were carried out using Microsoft Office Excel 2019.

Results: In our study, 71.2% of participants were 17-20 years old, and 83.2% were hostellers. Of the students, 215 (59%) had a normal BMI, 99 (27%) were overweight, and 9 (2.5%) were obese. We also discovered that 86% of students did not engage in any sports-related activities. Reasons for this included exhaustion from academic activities (32%), laziness (31%), and lack of time (21%).

Conclusion: It has been observed that a significant number of students have low levels of physical activity. To address this issue, it is recommended to incorporate health education programs that educate students about the risk factors and prevention of non-communicable diseases. Additionally, the College management should encourage extracurricular physical activities and sports among students to promote physical fitness and well-being.

Keywords: Physical activity, Obesity, NCD risk factor

Introduction

Throughout the 20th century, the leading causes of death have changed from infectious diseases to chronic illnesses. These chronic illnesses include cardiovascular disease, cancer, and diabetes.[1] Unhealthy lifestyle habits such as inappropriate nutrition, lack of exercise, smoking, alcohol consumption, caffeine overuse, and improper sleeping habits have been strongly linked to these diseases, while unhealthy habits are often considered a temporary part of college life, they tend to persist in adult life. However, college life can be stressful, which makes it difficult for individuals to adopt healthy practices.[2] Living an active and healthy lifestyle can benefit both individuals and society in many ways, such as increasing productivity, improving morale, decreasing absenteeism, and reducing healthcare costs, other benefits include improved psychological well-being, physical capacity, self-esteem, and the ability to cope with stress.[3] Regular exercise is well known to have numerous health benefits. It is also

established that regular moderate or vigorous-intensity exercise can lower the risks and symptoms associated with the co-morbidities of obesity[4.]

Non-communicable diseases are on the rise in both developed and developing countries. These diseases typically occur after a long latent period, during which the population is exposed to risk factors for extended periods[5.] Common behavioral risk factors such as tobacco and alcohol use, sedentary lifestyle, and unhealthy dietary practices are significant contributors to many non-communicable diseases, including hypertension, stroke, and ischemic heart diseases. These risk factors can be modified, and the most effective intervention for modifiable risk factors is primordial prevention. Healthcare workers play a crucial role in primordial prevention from early childhood. Medical officers lead the health care team at every level, so they should serve as role models for the younger population. Medical students are the future leaders of the healthcare team.[6]

Medical students are assumed to have a greater knowledge of healthy lifestyle and dietary habits compared to other students. Healthy habits among medical students are even more important as they are future physicians, and students who ignore adopting healthy lifestyles are more likely to fail to establish health promotion opportunities for their patients. Medical students have also been shown to exhibit early risk factors for chronic diseases.[7] With this background in mind, the current study aims to assess the attitude and practices of medical students regarding physical activity and to determine the motivating and hindering factors for the practice of physical activity.

Methodology:

After getting approval from the Institutional Ethical Committee (AV/IHEC/2023/113) a cross-sectional study was conducted among 364 undergraduate medical students from Aarupadiveedu Medical College & Hospital, Puducherry between August 2023 and October 2023 using a cluster sampling technique. Each year was considered as a cluster, and 91 samples were randomly selected from each year using a computer-generated random sampling technique. The data was collected using a standardized questionnaire International Physical Activity Questionnaire (October 2002) [8.] Questionnaires were uploaded in Epi collect app & link was shared to the students. In addition, demographic details, motivating and hindering factors for engaging in exercise, and self-reported height, and weight were added in the questionnaire. Body mass index (BMI) was calculated using Quetelet's index (weight in kilograms/height in meters square). The study included students from the 1st to 4th year who gave their consent to participate. Students who were absent on the day of the interview and those with a known history of Non-Communicable Diseases were excluded from the study. Data entry and analysis were carried out using Microsoft Office Excel 2019. The results are expressed as percentages and proportions. Students who did not consent to participate were excluded from the study.

Sample size calculation: The sample size 362 was calculated based on the statistical formula for estimating a single proportion. The expected proportion of physical activity is 0.62, with an absolute precision of 5%. the level of significance was taken as 5%. A similar study by Chythra R Rao et al [6] was taken as a reference.

Formula: $n \geq Z2(1-\alpha/2)\ p(1-p)/\ d2$

p= 62% (expected proportion)

d=5% (absolute precision)

n= 364

Operational definition:

We defined the BMI (kg/m2) of <18.5 - underweight, 18.5 to 22.9 - normal weight, 25.0–29.9- overweight, above 30.0 – Obese [9]

Smoker: We defined current tobacco use as the use of any form of tobacco within the past 30 days [10]

Alcoholic: current alcohol use as the intake of at least one standard drink of alcohol in the past 30 days[11]

Results:

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Table 1: Socio-demographic details of study participants

Socio-demographic characters		Frequency n=364	Percent (%)
Age	17-20 years	259	71.2
	21-23 years	100	27.5
	>23 years	5	1.4
Gender	Male	175	48.1
	Female	189	51.9
Year of studying	I	91	25.0
	II	91	25.0
	III	91	25.0
	IV	91	25.0
Residence	Hosteller	303	83.2
	Day scholar	61	16.8
Diet	Non vegetarian	337	92.6
	Vegetarian	27	7.4
BMI	<18.5	41	11.3
	18.5-25	215	59.1
	25-30	99	27.2
	>30	9	2.5
Famil H/O NCD	Yes	85	23.4
	No	279	76.6
Smoking	Yes	5	1.4
	No	359	98.6
Alcohol	Yes	10	2.7
	No	354	97.3

Our study found that most of the participants (71.2%) were aged between 17 to 20 years old, while 27.5% were aged between 21 to 23 years old. Only 1.4% of the participants were over 23 years old. Out of the total population, 48.1% were males and 51.9% were females. Almost 83.2% of the participants lived in campus hostels. In terms of BMI, 215 students (59%) had a normal BMI, 99 students (27%) were overweight, and only 9 students (2.5%) were obese. Additionally, 92.6% of the participants followed a mixed diet. It was found that

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23.4% of the students had a history of non-communicable diseases in their family. Furthermore, only 1.4% and 2.7% of the participants reported a history of smoking and alcohol consumption, respectively(see Table 1).

Table 2: Level of Physical Activity among study participants

Forms of Physical activities	VIGOROUS	MODERATE	NO PHYSICAL ACTIVITY
Job-related physical activity	57	89	222
Sports	57	51	313
Transportation-related (days scholar)	40	7	16
House work-related (days scholar)	22	22	19
Sitting on weekdays	65	115	184
Sitting on weekend	14	270	80

We found that only 15.6% of people engage in job-related physical activity(This includes paid jobs like volunteer work, course work, and any other unpaid work that you did outside your home. Do not include unpaid work you might do around your home, like housework, yard work, general maintenance, and caring for your family), while 23.6% engage in moderate physical activity, and 60.9% engage in low job-related physical activity. Shockingly, 86% of students are not involved in any sports-related activities. In addition, 34.9% of Day scholar students spend their days doing vigorous and moderate levels of household activities(this includes work around your home, like housework, gardening, yard work, general maintenance work, and caring for your family), and 63.4% of students engage in transport-related physical activity (like traveled from place to place, including to places like work, stores, movies, and so on). Unfortunately, 74.1% of students spend their weekends only sitting, while 50.5% of students spend their weekdays sitting(see Table 2).

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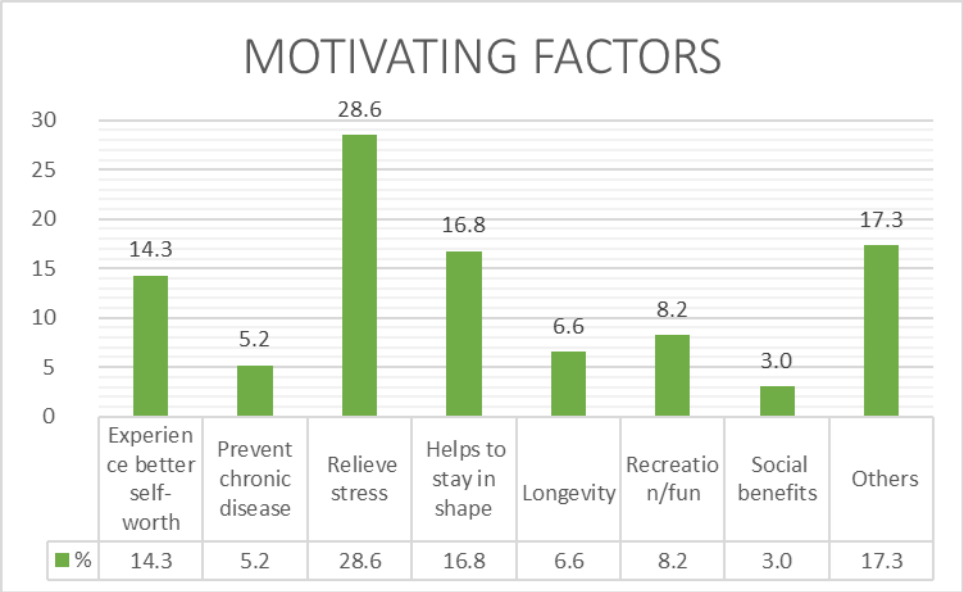
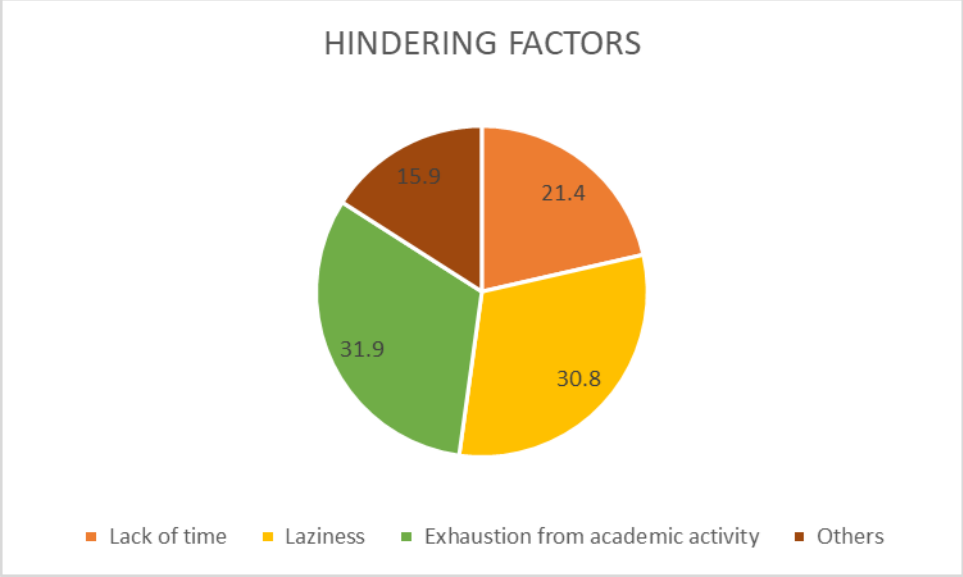
Fig 1: Motivating factors for doing physical activity



Out of the surveyed students, 28.6% students reported that their primary motivation for engaging in physical activity was to relieve stress. 16.8% students mentioned staying in shape as their main reason, while 14.3% students reported experiencing self-worth as the driving factor. Additionally, other factors such as preventing chronic diseases, living longer, social benefits, and recreation/fun also played a role in motivating students to engage in physical activity(see Fig 1)

Fig 2: Hindering factors for not doing physical activity



Hindrances to physical activity included exhaustion from academic activities (32%), laziness (31%), and lack of time (21%)(see Fig2).

Discussions:

In our study, around 60% of the participants had a normal BMI. Similar results have been reported from studies conducted in Thailand (59%), Kolkata (59%),[12] Malaysia (65%), Mangalore (70%), Columbia (80%), and Manipal (68.8%). [6]

In our study, 27% of the participants were found to be overweight (BMI≥25 kg/m²). A similar study

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conducted on Colombian students showed 22% [1,] Maharashtra 20% [13,] whereas a study conducted in Thailand and Pakistan showed a lower proportion, 16% of participants were overweight [2,6.] In our study, only 2.5% of students were found to be obese, while a study conducted in Bangladesh found a prevalence of obesity at 10.9% among CRMI's [14.]

In a study by Rao et al [6] found that around 62% of students participated in some form of physical activity. However, our study revealed that 60% of students were not engaged in any kind of physical activity. The study also reported that only 1.4% and 2.7% of the participants had a history of smoking and alcohol consumption, respectively. In contrast, in West Bengal 12.5% were current smokers, 8.3% were alcohol users [15] & in Kolkata, 19% of the participants had a history of smoking tobacco products, 1.7% chewed tobacco products, and 16.7% consumed alcohol.[12]

In my study, 23.4% of the students had a history of non-communicable diseases in their family. Meanwhile, a study conducted in Kolkata by Karmakar [12] showed that 40.50% of the study subjects had a family history of hypertension, 33.6% had a family history of diabetes, and 37.5% had a family history of coronary heart disease, a lower proportion of 11.8% family history of NCD seen similar result seen in Gujarat [16]

Lack of time was one of the hindering factors for not doing physical activity[17,] similar to our study

Summary/Conclusion:

The observed low levels of physical activity among students present a pressing concern that demands immediate and strategic action. Addressing this issue is vital, not only for the physical health of students but also for their mental well-being and academic performance. The integration of comprehensive health education programs and the promotion of extracurricular physical activities and sports are essential strategies to combat this problem. For these strategies to be effective, a collaborative approach involving faculty, staff, students, and external partners is essential. Continuous monitoring and evaluation of the programs will help in making necessary adjustments and improvements. Securing adequate resources and fostering partnerships with local health organizations and businesses can ensure the sustainability and success of these initiatives.

Limitations:

As the study was carried out in a medical college setting, and the results cannot be generalized to other settings.

Because it is based on self-reported information, there is a risk of non-response, response, and information bias.

Recommendations:

It is important to promote physical activity in medical schools and stress the significance of adopting a physically active lifestyle for medical students. This will enable them to advise their patients on healthy lifestyle practices as future physicians.

Ethical Consideration: We got approval for the study from the Institutional Ethical Committee before the commencement of the study (AV/IHEC/2023/113).

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