Original Article

A cross-sectional study on patterns, motivating factors and barriers for physical activity among undergraduate medical students

Abstract

Introduction: There is little published information exploring the perceptions and physical activity patterns among undergraduate medical students in our country. So this study was conducted with the following objectives: 1. To assess the perceptions about knowledge regarding physical activities among undergraduate medical students; 2. To assess their self-reported physical activity practices. **Materials and Methods:**This cross sectional study was conducted in Kasturba Medical College, Mangalore from 12th to 30th April, 2012. A total number of 427 students were chosen at by using the formula for infinite population. **Tools:** 1. A semi-structured questionnaire to know perceptions, barriers, and practices about physical activity; 2. Physical activity was assessed using International Physical Activity Questionnaire (IPAQ). Analysis was done by using SPSS version 11. Significance of differences across various levels of physical activity between different age-groups and gender were made by chi square test. **Results:** 376 students participated. Majority of them had high physical activity (54.75%). Knowledge was poor about prevention of diabetes (68.9%), stroke (61.6%), and osteoporosis (33.8%). Majority (82.4%) of them perceived health-related benefits of physical activity as motivating factors rather than prevention of chronic noncommunicable diseases. Most of them (72.3%) have enrolled in life style modification activities like yoga, going to gymnasium, etc. **Conclusion:** Most of the students fall into moderate physical activity group. Health-related benefits were the driving force for doing physical activity.

Key words: Barriers, medical students, motivating factors, physical activity patterns

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Access this article online

Website: www.ijmedph.org

DOI: 10.4103/2230-8598.144115

Quick response code:

INTRODUCTION

Adequate physical activity is very essential in order to have good health. Chronic disease is likely to be the primary disease cluster in India in the future.[1] Physical inactivity is an important risk factor for the development of several chronic diseases including coronary artery disease, hypertension, diabetes, cancers, obesity, and osteoporosis.[2,3] This mainly occurs due to the changing lifestyles of people.

In an academically demanding environment of college, students tend to do less physical activity.[4] One published study conducted on junior doctors from India did not explore the knowledge about physical activity or patterns of physical activity.[5] Another published from India which reported the patterns of physical activity did not explore if any students made a attempt change their lifestyle.[6] A comprehensive approach which explores various aspects would enhance the understanding. So this study was conducted with the objectives:

1. To assess the perceptions and knowledge regarding physical activities;
2. To assess the pattern of physical activity;
3. Barriers and motivating factors for physical activity among undergraduate medical students.

MATERIALS AND METHODS

Study design

This is a questionnaire based Cross-sectional study.

Study setting

Kasturba Medical College, Mangalore, South India.

Study duration

This study was conducted in the Month of April 2012.

Study population

Undergraduate medical students of KMC (1st and 2nd year MBBS students), Mangalore. Inclusion criteria: All undergraduates who were present in the classrooms and willing to participate were included in the study. Those who were not willing were excluded.

Sample size

Assuming that at least 50% of the students would undertake one or the other kind of physical activity, for 95% confidence interval, 85% power, and 10% non-response, the sample size came to be 427.

Sampling

Non-random sampling. The students who met the study criteria as mentioned above were considered.

Study instruments

1. A semi structured questionnaire was devised to collect the following components of information from the study population:
   a. Characteristics of study subjects like age, gender, and semester;
   b. Perceptions and barriers about physical activity; and
   c. Physical activity practices measured by International Physical Activity Questionnaire (IPAQ).[7]
2. IPAQ[7]:
   a. The development of an international measure for physical activity commenced in Geneva in 1998;
   b. This questionnaire is devised for a 15-69 age group;
   c. There are 2 forms — short and long. The short form was used in our study as it was more appropriate for younger individuals; and
   d. The short version has seven questions, which enquires about the time spent in being physically active in last 7 days. Physical activity is graded as mentioned below.

Operational definitions

A. Physical activities are activities where there are movements which increase heart rate above its resting rate, whether it is done for pleasure, work or transportation.[7]
B. Grades of physical activity:
   1. Low: is the lowest level of physical activity. Those individuals who do not meet criteria for categories 2 or 3 are considered low/inactive.
   2. Moderate: Any one of the following 3 criteria:
      a. 3 or more days of vigorous activity of at least 20 minutes per day or
      b. Five or more days of moderate-intensity activity or walking of at least 30 minutes per day or
      c. Five or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 600 min/week.
   3. High: Any one of the following 2 criteria:
      a. vigorous-intensity activity on at least 3 days and accumulating at least 1500 minutes/week or
      b. 7 or more days of any combination of walking, moderate-intensity or vigorous intensity activities achieving a minimum of at least 3000 minutes/week.[7]

Data collection

Institutional Ethics Committee approval was sought. Permission was obtained from the Dean for approaching the students in the classrooms. The purpose of the study was explained. Questionnaires along with attached written informed consent forms were distributed to them. A period of 10 minutes was given to fill the forms. Filled forms were collected. Inappropriately filled forms were excluded from data analysis.

Data analysis

The data was analyzed using SPSS ver.12.0. Results are presented as proportions in tables. Chi-square test was applied to know if the observed differences are statistically significant a $P \leq 0.05$ was considered significant.

RESULTS

A total of 376 students responded to our study which was less than 427, giving us a non-response rate of 11.94%. The proportion of females (52.4%) was slightly higher than males (47.6%). The age-group distribution of students is as follows: 16-18 (24.2%), 19-21 (72.3%), 22-24 (3.5%).

The perceived benefits of physical activity are shown in Table 1. The reason for doing physical activity was for gaining health-related benefits rather than prevention of chronic diseases [Table 2]. The pattern of physical activity is given in Table 3. Sports related activities were the most common type. Climbing the stairs was preferred to taking the lift.

High physical activity was more common. This is cross-tabulated with gender and semester which are presented in Table 4. The proportion of females in high physical activity category is more than males.

DISCUSSION

Grading of physical activity

Majority of the students fall in to the high physical activity group followed by moderate activity. Using a different scale, Bannerjee *et al.*, found that less proportion undertook vigorous physical activity.[6] We do not have comparable results about lifestyle modification. Majority of the students enrolled in to yoga classes, in addition to

Table 1: Knowledge and perception about benefits of physical activity (*n* = 376)

Perception	*N* (%)
Physical activity helps in prevention of	
Obesity	341 (90.7)
Coronary artery disease	317 (84.3)
Hypertension	302 (80.3)
Diabetes	259 (68.9)
Stroke	194 (51.6)
Osteoporosis	127 (33.8)
Others	13 (3.46)
Others like (*n*=13)	
To get good sleep	5 (38.5)
Avoid stress	4 (30.8)
To avoid depression	4 (30.8)
Perceived benefits of physical activity	
Keeps me fresh	310 (82.4)
To burn excess calories	280 (74.5)
Reduce stress	253 (67.3)
Improves my memory	176 (46.8)
Others	7 (1.9)
Others like (*n*=7)	
Better sleep	3 (42.9)
Keeps me fit	4 (57.1)
Like to do physical activity	
Yes	328 (87.2)
No	45 (12)
No response	3 (0.8)

Table 2: Practice and motivation for physical activity

Practice	*N* (%)
If no, reasons	
No time	28 (7.4)
Affect studies	17 (4.5)
No space	6 (1.6)
No response	8 (2.13)
Enrolled for Physical Activity	
Yes	272 (72.3)
No	32 (8.5)
Don't know/not sure	72 (19.1)
If yes, reasons (*n*=72)	
Burn calories	24 (33.3)
Mental peace	22 (30.5)
Increases stamina	15 (20.8)
Keeps me fit	11 (15.3)
Motivation	
To be Fit and healthy	305 (81.1)
To Reduce Weight	263 (69.9)
To Increase Muscle mass	163 (43.4)
To increase Flexibility and strength	159 (42.3)

physical activity. This would reduce the risks of chronic diseases in the long run.

Motivation and barriers

Majority of the students liked to do physical activity. Perceived benefits of physical activity and their knowledge are good among

Table 3: Pattern and duration of physical activity (*n* = 376)

Pattern and duration	*N* (%)
Playing games	209 (55.6)
Jogging	142 (37.8)
Swimming	141 (37.5)
Cycling	121 (32.2)
Gym	117 (31.1)
Others	37 (9.8)
Others like (*n*=37)	
Skipping	11 (29.73)
Dancing	9 (24.32)
Aerobics	9 (24.32)
Exercise	8 (21.62)
Duration (Years)	
<1	78 (20.7)
1-2	72 (19.1)
2-5	69 (18.4)
5-10	110 (29.3)
No response	47 (12.5)

medical students. Most of the students have reported health-related benefits as the reason for doing physical activity. Certain students do it to get good sleep and to avoid stress and depression. Even their motivation was for health-related benefits rather than prevention of chronic diseases. Bharathi *et al.*, reported that older adults performed household chores to a greater extent than the younger individuals who spent more time on their hobbies.[8] Rees *et al.*, have reported that physical activity among young adults serves to show off their skills, enjoyment and using exercise as a way of relieving stress.[9] Our study population consists of younger individuals. This explains the pattern of physical which is mainly sport related which can be attributed to younger age.

Gender differences

Gender differences were statistically significant but the differences based on semester were not. U.S. Department of health and human services has reported that, males are more likely than females to participate in vigorous physical activity, strengthening activities, and walking or bicycling.[10] We found that higher proportion of females had high physical activity, and the differences were statistically significant. Age-group of respondents in our study (18 + years) was higher than the reported from US (12-21 years). Besides the study population consisted of medical undergraduates as compared to younger students from US which could explain the differences.

Limitations

There are some limitations. The non-response rate was slightly higher (11.94%) than what we anticipated. But the response rates observed in our study was higher than those reported by others.[8,11] We cannot rule out response bias as it is a questionnaire based study.

Table 4: Grading of physical activity (IPAQ[6]) (*n* = 376)

Types	Gender		Chi square (*P*)	Semester		Chi square (*P*)
	Males (%)	Females (%)		2nd (%)	4th (%)	
Low (*n*=100)	61 (61)	39 (39)		63 (63)	37 (37)	
Moderate (*n*=121)	51 (42.15)	70 (57.85)	8.56	60 (49.6)	61 (50.4)	4.37
High (*n*=211)	98 (46.44)	113 (53.55)	(0.01)	111 (52.61)	100 (47.39)	(0.11)

CONCLUSION

Most of the students fall into moderate physical activity group. Health-related benefits were the driving force for doing physical activity.

ACKNOWLEDGEMENTS

We express our hearty gratitude to the Department of Community Medicine and the students of Kasturba Medical College, Mangalore who took part in our study.

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How to cite this article: Kumar HH, Ramakrishnan N, Chandrashekar M, Jayaramegowda A, Kadian M, Chauhan V. A cross-sectional study on patterns, motivating factors and barriers for physical activity among undergraduate medical students. Int J Med Public Health 2014;4:413-6.

Source of Support: Nil, **Conflict of Interest:** None declared.