

Original Article

Pattern and Barriers of Physical Activity among Medical Students of Al-Jouf University, Saudi Arabia

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Abstract

Background: Physical inactivity is a public health problem in Saudi Arabia. Physical inactivity is associated with several chronic diseases, increased medical care costs and premature death.

Objectives: To determine the pattern of physical activity, the predictors of physical inactivity and the perceived barriers of physical activity among students in College of Medicine at Al-Jouf University, Saudi Arabia.

Methods: A cross sectional study was carried out among 283 medical students in the age group of 19-33 years. The Arabic short form of International Physical Activity Questionnaire (IPAQ) was used to measure physical activity. Analysis was done according to the guidelines for data processing and analysis of the IPAQ.

Results: Overall, 60.1% of the students were physically inactive. Only 38.2% of the students performed vigorous physical activity, 21.9% moderate-intensity physical activity and 33.2% walking activities, which met World Health Organization criteria of health-enhancing physical activities. The significant predictors of physical inactivity were low father education, dead or retired father, mothers not working for cash, families with five members or more and non-participation in sports clubs. The significant barriers of physical activity among physically inactive students were time limitations, lack of money, lack of safe sport places, not being interested in sports and body cannot tolerate physical activity.

Conclusion: The majority of medical students of Al-Jouf University in Saudi Arabia are physically inactive. Overcoming perceived barriers may increase physical activity among university students.

Key words: Physical activity, university students, Saudi Arabia, IPAQ

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INTRODUCTION

Saudi Arabia has experienced a rapid progress in improving the health and well-being of its people during the past few decades. One of the more significant consequences of the socioeconomic development in Saudi Arabia is lifestyle changes with subsequent adverse effects on health. In particular, an increase in obesity and physical inactivity has been evidenced.⁽¹⁾ The prevalence of physical inactivity in the Saudi society ranged from 43% to as high as 99% in certain segments of the population.⁽²⁾ A community-based national study in Saudi Arabia has shown the overall prevalence of coronary heart disease (CHD) and diabetes mellitus (DM) to be 5.5% and 23.7%, respectively.⁽³⁾ Moreover, the expected increase in CHD mortality in the Middle East in year 2020 compared with 1990 is estimated to be the largest worldwide: “146% increase in women and

174% in men”.⁽⁴⁾ Prevention of many non-communicable diseases begins with control of modifiable risk factors, including physical inactivity. Physical inactivity represents an independent risk factor for a number of non-communicable diseases, including CHD, DM, hypertension, obesity, and osteoporosis⁽⁵⁾. The World Health Organization (WHO) has indicated that physical inactivity is one of the top 10 leading global causes of mortality and disability worldwide, responsible for an estimated 1.9 million deaths and 19 million disabilities each year.⁽⁶⁾ Regular physical activity was shown to reduce the risk of numerous diseases and enhance psychological wellbeing.⁽⁷⁾ In spite of the well-recognized benefits of physical activity, millions of people are inactive and the prevalence of physical inactivity is growing.⁽⁸⁾ Identification of the determinants of physical inactivity is warranted for planning of proper interventions. Perceived barriers to physical activity have been widely studied in the

developed countries. It is demonstrated that perceived barriers are inversely associated with physical activity.⁽⁹⁾ Being a student in the college of medicine was found to be associated with a high risk of physical inactivity. This is shown in some studies.^(10, 11) Heavy academic study was considered to be one of the barriers to participation in physical activity in a university population in China.⁽¹²⁾ The importance of addressing the pattern of physical activity specifically among medical students is related mainly to the fact that they are the future health-care providers and have an important role in health promotion and dissemination of healthy lifestyle to the public. Also, understanding common barriers to physical activity and creating strategies to overcome them may help make physical activity part of their daily life.⁽¹¹⁾ In Al-Jouf region in Saudi Arabia, no study was carried out to determine the pattern and barriers of physical activity especially among the university students. The objectives of the present study were to determine the pattern of physical activity, the predictors of physical inactivity and the perceived barriers of physical activity among students in College of Medicine at Al-Jouf University, Saudi Arabia.

METHODS

Study setting: The present study was carried out in College of Medicine of Al-Jouf University during the academic year 2015-2016. Al-Jouf University is one of the biggest public universities in the north region of Saudi Arabia. College of Medicine in Al-Jouf University comprises of two sections, male and female. The female section in College of Medicine has first and second year students while, the male section has up to fifth year students. A total of 266 male students were enrolled in the male section while, 64 female students in the female section.

Study design: The design of the study was descriptive cross sectional based on self-administered questionnaire. The study subjects were all students enrolled in College of Medicine. The total number of students of College of Medicine is 330. Total coverage of all students in College of Medicine was attempted however; only 283 questionnaires were completed yielding a response rate 85.8%. Reasons for non response were absence during the study period, incomplete questionnaires and lack of interest in the study. Students with chronic diseases were excluded from the study.

Study tool: An anonymous, self-administered questionnaire was used to collect data regarding the following: sociodemographic characteristics (age, sex, father education, mother education, father job, mother job, family income, number of family members and membership of sports clubs); self-reported level of physical activity and self-perceived barriers to physical activity. Physical activity was assessed using the official Arabic short version of the International Physical Activity

Questionnaire (IPAQ).⁽¹³⁾ IPAQ short form is an instrument designed primarily for population surveillance of physical activity among adults (age range 15–69 years).⁽¹⁴⁾ This version provides detailed information for evaluation purposes. Also, it has been validated and used by several studies among the Saudi Arabia adult population.^(11, 15, 16) The short form of IPAQ used in the present study has 7 items providing information on time spent walking, in vigorous and moderate-intensity physical activities during the previous 7 days. IPAQ defines moderate physical activities as those that produce a moderate increase in respiration rate, heart rate and sweating for at least 10 min duration. This is equivalent to 3–6 metabolic equivalents (MET) based on the compendium of physical activity.⁽¹⁷⁾ Vigorous physical activities are defined as those producing vigorous increase in respiration rate, heart rate and sweating for at least 10 min duration. The metabolic equivalent value is above 6 MET.⁽¹⁷⁾ Before students had answered the questions, they were asked to think about all the vigorous and moderate activities that they had done in the previous 7 days during work, transport, household, yard/ garden and leisure/sports. A list of possible barriers to physical activity as suggested by El-Gilany et al.,⁽¹⁰⁾ was used to examine the barriers of physical activity among the students.

Data entry and analysis

Physical activity levels were classified into 3 categories: high, moderate and low, according to the scoring system provided by IPAQ.⁽¹⁸⁾ Vigorous activities, moderate activities and walking for each subject were classified as meeting or not meeting WHO criteria for physical activity for health. According to WHO physical activity recommendations, healthy adults aged 18-64 years should do at least 150 minutes of moderate intensity physical activity throughout the week or do at least 75 minutes of vigorous intensity physical activity throughout the week. Regarding walking, WHO recommends walking for at least 150 minutes throughout the week.⁽¹⁹⁾ Data analysis was performed using SPSS version 16. Descriptive statistics were performed. Comparison between groups was done using chi-square and Fisher's Exact tests for qualitative variables. $P < 0.05$ was considered statistically significant.

Ethical Considerations

Prior ethical approval was obtained from the Ethics Committee of the College of Medicine at Al-Jouf University. The study complied with the international ethical guidelines and those of declaration of Helsinki 2013. The students have been invited to participate in the study after explaining the purpose of the study and emphasizing the confidentiality of the collected data through anonymous self-administered questionnaires. The participation of the students in the present study was optional and based on informed verbal consent. Each student spent about 10 minutes in completing the questionnaire.

RESULTS

The sociodemographic characteristics of the studied students are presented in Table (1). Age of the students ranged from 19 to 33 years with a mean of 22.02 ± 2.19 years. The table shows that 44.2% and 41% of their fathers and mothers respectively had attained university education. Nearly half of their fathers were employees (47%) while, 61.8% of their mothers were not working for cash. Regarding the number of family members, 77% of the students had families with five members or more. Table (1) also revealed that 70.7% of the students didn't have sports club membership. Regarding the pattern of physical activity, which was shown in Fig. (1) & Table (2), 60.1% of the students were physically inactive whereas, 30.4% and 9.5% of the students had moderate and high intensity physical activities respectively with no statistically significant difference between males and females. The table shows that 38.2% of the students performed vigorous activities for 75 min/week or more. Male students were significantly more likely to participate in vigorous activities compared to females ($p=0.008$) as 42.2% of the male students performed vigorous activities for 75 min/ week or more versus 23.3% for the females. Regarding moderate activities, 21.9% of the students performed these for 150 min/ week or more with no statistically significant difference between males and females. Walking for 150 min/ week or more was performed by 33.2% of the students. Female students were significantly more likely to participate in walking compared to males ($p=0.005$) as 48.3% of the females do walking for 150 min/ week or more versus 29.1% for the males. Table (3) revealed that father education, father job, mother job, number of family members and non-participation in sports clubs were significant predictors of physical inactivity. Regarding father education, 40% of the students whose fathers were university postgraduates were physically inactive against 60% of those whose fathers were illiterate or only could read and write ($p=0.049$). Also, 72.8% of the students whose fathers were dead, retired or not working were physically inactive in comparison to 50.4% of students whose fathers worked as employees ($p=0.005$). Mothers not working for cash was a significant predictor of physical inactivity, as 70.9% of mothers not working for cash had physically inactive students versus 42.6% of mothers working for cash ($p=0.000$). Regarding the number of family members, 66.1% of families with five members or more had physically inactive students versus 40% of families with less than five members ($p=0.000$). Non-participation in sports clubs was a significant predictor of physical inactivity, as 39.8% of the students who had sports clubs membership were physically inactive against 68.5% of those who didn't have ($p=0.000$).

The most perceived barriers to physical activity were time limitations and having other important priorities as they were reported by 77.7% and 44.9% of the students respectively (Table 4). The significant barriers to physical activity among physically inactive students were: time limitations (84.1%), lack of safe sport spaces (25.3%), not being interested in sports (13.5%), high cost (11.8%) and body cannot tolerate physical activity (11.8%) (Table 5).

Table (1): Sociodemographic characteristics of Al-Jouf medical students

	No. (n= 283)	%
Age:		
< 24 years	200	70.7
≥ 24 years	83	29.3
Mean ± SD (Range)	22.02 ± 2.19 (19 – 33)	
Sex:		
Male	223	78.8
Female	60	21.2
Father's education:		
Illiterate	8	2.8
Read & write	12	4.2
Basic education	51	18.0
Secondary	47	16.6
University	125	44.2
University Postgraduate	40	14.1
Mother's education:		
Illiterate	15	5.3
Read & write	30	10.6
Basic education	53	18.7
Secondary	49	17.3
University	116	41.0
University Postgraduate	20	7.1
Father's job:		
Employee	133	47.0
Military	31	11.0
Dead/ retired/ not working	103	36.4
Free business	16	5.7
Mother's job:		
Working for cash	108	38.2
Not working for cash	175	61.8
Family income:		
< 5,000 RS	50	17.7
5,000 - < 10,000 RS	52	18.4
10,000 - < 15,000 RS	48	17.0
≥ 15,000 RS	133	47.0
No. of family members:		
< 5	65	23.0
≥ 5	218	77.0
Sports club membership:		
Yes	83	29.3
No	200	70.7

Table (2): Relationship between the pattern of physical activity and sex of Al-Jouf medical students

	Male (n= 223)		Female (n= 60)		Total (n= 283)		P-value
	No.	%	No.	%	No.	%	
Physical activity:							
High	21	9.4	6	10.0	27	9.5	0.454
Moderate	64	28.7	22	36.7	86	30.4	
Low	138	61.9	32	53.3	170	60.1	
Vigorous activities:							
< 75 min/ week	129	57.8	46	76.7	175	61.8	0.008*
≥ 75 min/ week	94	42.2	14	23.3	108	38.2	
Moderate activities:							
< 150 min/ week	177	79.4	44	73.3	221	78.1	0.315
≥ 150 min/ week	46	20.6	16	26.7	62	21.9	
Walking:							
< 150 min/ week	158	70.9	31	51.7	189	66.8	0.005*
≥ 150 min/ week	65	29.1	29	48.3	94	33.2	

Table (3): Relationship between physical activity and sociodemographic characteristics of the students

	Physically active (n= 113)		Physically inactive (n= 170)		P-value
	No.	%	No.	%	
Age: (years)					
< 24	87	43.5	113	56.5	0.057
≥ 24	26	31.3	57	68.7	
Sex:					
Male	85	38.1	138	61.9	0.230
Female	28	46.7	32	53.3	
Father's education:					
Illiterate/ Read & write	8	40.0	12	60.0	0.049*
Basic education	16	31.4	35	68.6	
Secondary	15	31.9	32	68.1	
University	50	40.0	75	60.0	
University Postgraduate	24	60.0	16	40.0	
Mother's education:					
Illiterate/ Read & write	15	33.3	30	66.7	0.273
Basic education	20	37.7	33	62.3	
Secondary	15	30.6	34	69.4	
University	53	45.7	63	54.3	
University Postgraduate	10	50.0	10	50.0	
Father's job:					
Employee	66	49.6	67	50.4	0.005*
Military	14	45.2	17	54.8	
Dead/ retired/ not working	28	27.2	75	72.8	
Free business	5	31.3	11	68.8	
Mother's job:					
Working for cash	62	57.4	46	42.6	0.000*
Not working for cash	51	29.1	124	70.9	
Family income:					
< 5,000 RS	15	30.0	35	70.0	0.062
5,000 - < 10,000 RS	17	32.7	35	67.3	
10,000 - < 15,000 RS	17	35.4	31	64.6	
≥ 15,000 RS	64	48.1	69	51.9	
No. of family members:					
< 5	39	60.0	26	40.0	0.000*
≥ 5	74	33.9	144	66.1	
Sports clubs membership:					
Yes	50	60.2	33	39.8	0.000*
No	63	31.5	137	68.5	

Chi-square test

* Statistically significant difference (P < 0.05)

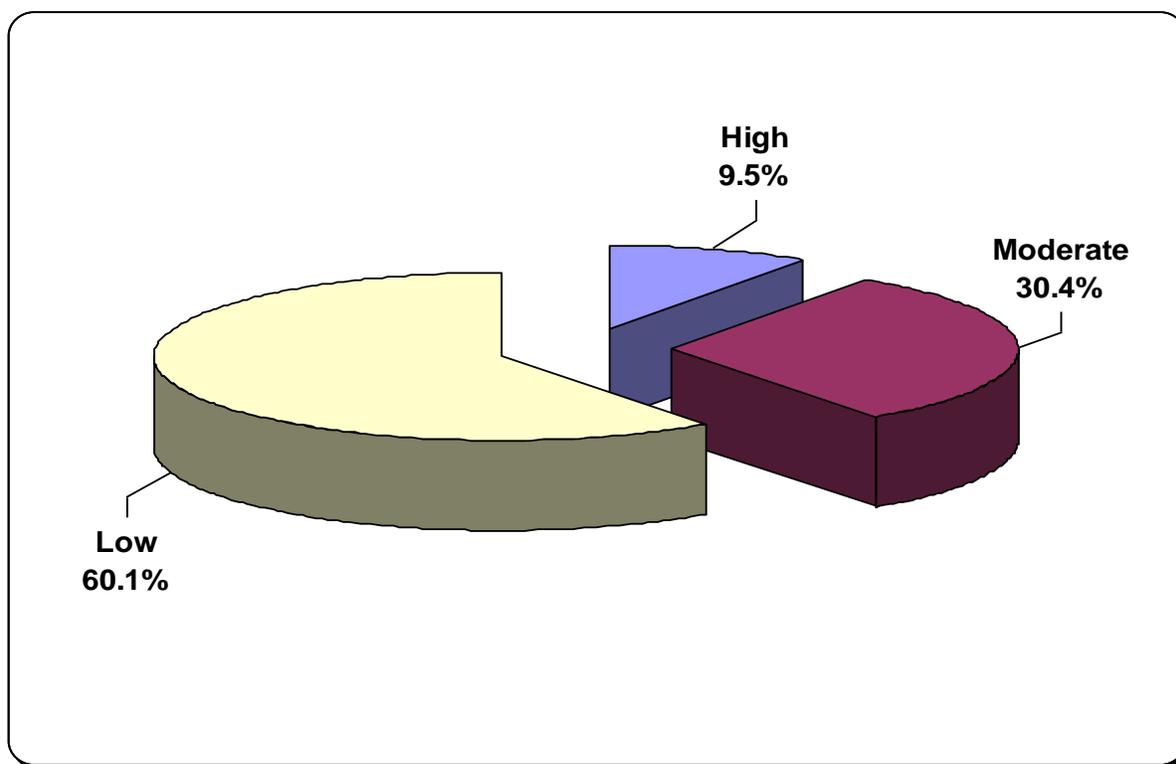


Figure (1): Pattern of physical activity among the studied students

Table (4): Perceived barriers toward physical activity as reported by Al-Jouf medical students

Barriers	No. (n= 283)	%
Time limitations	220	77.7
Have other important priorities	127	44.9
Lack of friends to encourage me	74	26.1
Lack of accessible and suitable sports places	64	22.6
Lack of motivation	63	22.3
Lack of safe sports places	60	21.2
Unsuitable (hot or cold) weather	50	17.7
Lack of support and encouragement from others	46	16.3
Feeling tired on physical activity	44	15.5
Lack of sports programs that suit my physical fitness	30	10.6
Not interested in sports	29	10.2
Body cannot tolerate physical activity	25	8.8
Prefer not to attend sports places	24	8.5
High cost	21	7.4
Lack of sports skills	21	7.4
Fear of injury	17	6.0
Feeling unable to practice sports adequately	17	6.0
Nobody to care for my family	13	4.6
Lack of or low physical power	13	4.6
Ignorance about benefits of sports	6	2.1
Fear of failure in sports competition	5	1.8
Previous bad experience with physical sports activity	5	1.8
Fear of deterioration of physical illness	3	1.1
Objection of parents	3	1.1
Previous failure in sports competition	2	0.7

More than one answer had been reported

Table (5): Perceived barriers toward physical activity among physically active and inactive students

Barriers	Physically active (n= 113)		Physically inactive (n= 170)		P-value
	No.	%	No.	%	
Time limitations	77	68.1	143	84.1	0.002*
Have other important priorities	48	42.5	79	46.5	0.508
Lack of friends to encourage me	26	23.0	48	28.2	0.327
Lack of accessible and suitable sports places	24	21.2	40	23.5	0.652
Lack of motivation	26	23.0	37	21.8	0.805
Lack of safe sports places	17	15.0	43	25.3	0.039*
Unsuitable (hot or cold) weather	21	18.6	29	17.1	0.742
Lack of support and encouragement from others	16	14.2	30	17.6	0.436
Feeling tired on physical activity	21	18.6	23	13.5	0.250
Lack of sports programs that suit my physical fitness	13	11.5	17	10.0	0.687
Not interested in sports	6	5.3	23	13.5	0.026*
Body cannot tolerate physical activity	5	4.4	20	11.8	0.033*
Prefer not to attend sports places	9	8.0	15	8.8	0.799
High cost	1	0.9	20	11.8	0.001*
Lack of sports skills	7	6.2	14	8.2	0.521
Fear of injury	6	5.3	11	6.5	0.687
Feeling unable to practice sports adequately	7	6.2	10	5.9	0.914
Nobody to care for my family	7	6.2	6	3.5	0.294
Lack of or low physical power	4	3.5	9	5.3	0.490
Ignorance about benefits of sports	1	0.9	5	2.9	0.407≠
Fear of failure in sports competition	1	0.9	4	2.4	0.651≠
Previous bad experience with physical sports activity	0	0.0	5	2.9	0.161≠
Fear of deterioration of physical illness	2	1.8	1	0.6	0.566≠
Objection of parents	1	0.9	2	1.2	0.815≠
Previous failure in sports competition	0	0.0	2	1.2	0.519≠

Chi-square test

≠ Fisher's Exact test

* Statistically significant difference (P < 0.05)

DISCUSSION

The present study showed that more than half of participants were physically inactive. This is consistent with other studies conducted in Saudi Arabia.^(2,11,20,21) The high prevalence of physical inactivity among university students in Saudi Arabia may be explained by reliance on cars rather than walking, sedentary lifestyles and the limited physical education programs in schools and universities. Other countries of the Gulf region also showed a high prevalence of physical inactivity. For example, a study in Kuwait reported a prevalence of physical inactivity of 34% and 55% among male and female university students respectively.⁽²²⁾ Regarding other Arab countries, in Egypt 11.3% of the students at Mansoura University were physically inactive⁽¹⁰⁾ and at Alexandria University one third were physically inactive.⁽²³⁾ In a Lebanese study about 73.6 % of the students were physically inactive.⁽²⁴⁾ Nearly one third of Chinese and Brazilian university students were physically inactive.^(25, 26) A study conducted in Canada showed that fewer than half of university students participated in exercise 3 or more times per week²⁷. Also, a study in the USA revealed that only 17% of university students were physically inactive.⁽²⁸⁾ This

variation in the level of physical inactivity between different countries is a reflection of socioeconomic development, technology and urbanization. Although health-enhancing physical activities play an important role in lowering the risk of chronic diseases⁽²⁹⁾, and should be prioritized in the lives of university students, the present study showed that 38.2%, 21.9% and 33.2% of the students performed vigorous intensity, moderate intensity and walking activities that meet WHO criteria of health-enhancing physical activities. These values were lower than that reported in developed countries. The National College Health Risk Behavior Survey in USA reported that 42% of college students participated in vigorous activity that met WHO criteria, while an additional 20% participated in moderate activity.⁽³⁰⁾ Staten et al. reported that 39% and 41% of university students were vigorously and moderately physically active.⁽³¹⁾ In the present study females were less likely to engage in vigorous physical activity than were males. The same finding has been reported by many studies in different cultures and different age groups.^(21, 25, 32-34) In many traditional communities, females face social pressures that have historically linked physical power and athleticism to maleness. Femininity is not consistent with vigorous activity and sports. Also, cultural norms

and values in Saudi Arabia are more permissive for boys to practice physical activity and restrict females to the domestic domain.^(35, 36) The current study found that females were more likely to participate in walking than males. This might be due to the fact that females in Saudi Arabia are more likely to use stationary exercise machines at home for walking. There is a controversy about the effect of socioeconomic status on physical activity level. While some studies reported that low socioeconomic status was associated with sedentary behavior and low levels of physical activity⁽³⁷⁾, other studies found that high socioeconomic status was associated with high physical inactivity.^(26, 31) The present study showed that low socioeconomic status was associated with high levels of physical inactivity. The socioeconomic characteristics which were associated with high physical inactivity in this study were low father education, dead or retired father, mothers not working for cash, families with five members or more and non-participation in sports clubs. There is considerable variation in perceived barriers for physical activity among study subjects in various countries.⁽³⁸⁾ The present study showed that the most frequently cited barrier among physically inactive students is lack of time and this is consistent with other studies.^(11, 39, 40) Lack of money is another significant barrier that was reported more by physically inactive students. This is consistent with studies conducted in developing countries^(10, 11, 38) and unlike studies in developed countries.⁽³⁹⁾ Saudi Arabia is known by its hot and rough weather. Outdoor activity happens least from afternoon to sunset. Schools and universities remain closed for 3 months in summer. So, lack of safe sport places, loss of interest in sports and body cannot tolerate physical activity are other barriers that were reported more by physically inactive students in this study.

Limitations of the study

The study addresses the problem of physical inactivity among students of college of Medicine only. Also, the female section in the college of Medicine has up to second year students only. A larger study to include all colleges should be done. Furthermore, there is a need for a national study with a representative sample to address the issue of physical inactivity in university students in Saudi Arabia at large. The present study was carried out among students of college of Medicine during the academic year. The levels of physical activity may differ in other youth groups and may vary during vacations and at the time of examinations.

CONCLUSION

The observed high prevalence of physical inactivity among students of College of Medicine should give a

warning sign to the public health authorities in the north region of Saudi Arabia. These authorities should continue their efforts to raise population awareness about the benefits of physical activity and healthy lifestyles for the prevention of chronic diseases and the improvement of quality of life. University curricula should include the opportunity for all students to participate in physical activity. Lowering the academic burden will give the students more time to participate in physical activity.

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