

Original paper

Levels of Physical Activity, Patterns, and Perceived Barriers, Among University Students in Oman: A cross-Sectional Study

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Abstract

Objective: To investigate the prevalence, pattern, and the perceived barriers, of physical activity among Omani university students studying in Oman.

Methodology: A self-administered questionnaire using the short-form of the International Physical Activity Questionnaire (IPAQ) was disseminated to a selected sample of university students, from their second academic year onwards through Whats AppTM. Descriptive, Bivariate and multivariate analysis was conducted to measure patterns, levels and associated factors.

Results: Overall 44% were classified as highly active, 30% as moderately active, and 26% as lowly active or inactive. Younger students (less than and equal 22 years), male students, respondents with a positive perception of weight (normal or below), and self-perceived physically active (moderate to high) were more likely to engage in moderate to high physical activity. Students in university of 4 years and on wards (OR: 2.69) and students were members of sports youth clubs (OR: 2.76) were significantly more likely to engage in moderate or high physical activity. Lack of motivation was the top barrier of physical activity.

Conclusions: More than a quarter of surveyed Omani university students were physically inactive which has the potential to have a detrimental effect on their health and well-being. Therefore, creating a conducive environment is essential for improving short and long-term health outcomes.

Keywords

physical activity, barrier, Oman, university students, pattern, prevalence

1. Introduction

The World Health Organization (WHO) recommends for adults (18-64 years) 150 minutes in at least 5 days a week of moderate-intensity of aerobic physical activity or at least 75 minutes per week of vigorous-intensity type of physical activity in at least 3 days a week. (Note 1) Moderate to vigorous physical activity improves cardio respiratory fitness, which is in turn associated with a healthier cardiovascular profile, a healthier body composition. (Note 1) Physical inactivity levels are increasing worldwide with major implications on non-communicable diseases. Inadequate physical activity is considered as the fourth leading risk factor for early death. (Note 1) It has been identified as the leading cause of over 24% of breast and colon cancer, 27% of diabetes and 30% of ischemic heart disease. (Note 1) In Oman, urbanization in recent decades has resulted in a growing level of physical inactivity and a sedentary lifestyle in the Omani population. (Note 5) It demonstrated an increase in the level of physical inactivity among Omani adult citizens from 37% in 2008 to 41.6% in 2017, and an increase in obesity and chronic diseases. (Note 2), (Note 3)

In Oman, 74% of the population are young people (15-64 years) and 1% of them are enrolled in university or college in 70 educational institutions. (Note 2) For college students in Oman, a Knowledge, Attitude and Practice survey (KAP) in 2008 indicated that the prevalence of physical inactivity is 43% in men and 57.8% in women. (Note 4)

Additionally, various perceived barriers have been demonstrated through different studies and they are significantly correlated with physical inactivity among international students such as time limitation scored the highest (51.3%), lack of accessible and suitable sport places (30%). (Note 7) There is a dearth of published studies in Oman describing the levels of physical activity, patterns, and perceived barriers, among university students. Thus, this study targets Omani university students to determine the levels, patterns and perceived barriers of their physical activity.

2. Methods

2.1 Study Design and Population

A cross-sectional study was conducted amongst 255 conveniently selected male and female undergraduate Omani university students starting with their second year of study onwards, using snowball sampling. (Note 10)

2.2 Study Setting

The survey was conducted for Omani citizen university students studying in Oman (academic year 2019-2020).

2.3 Study Tool

The pattern of physical activity in terms of intensity is defined by how the individual works doing the activity and has been categorized as low, moderate and vigorous physical activity intensity. (Note 1) They are measured by the Metabolic Equivalent of Tasks (METs) in the sense that physical activity

scored of less than 3.0 METs, 3-6 METs and more than 6.0 METs, as low, moderate and vigorous physical activity, respectively. The International Physical Activity Questionnaire (IPAQ) short form was used in this study, which includes seven elements providing information on the previous seven days of walking, vigorous and moderate physical activity, and sedentary activity. A list of perceived barriers, that is suggested and tested by El-Gilany et al. (2011) (Note 7) were included in this study and have been suggested to be experienced by university students. The study questionnaire included the socio-demographic characteristics (age, sex, name of the Governorate, type of the university or college, educational level, family income), health status characteristics (membership in sports clubs, smoking status, chronic diseases status, self-reported weight and height rates), physical activity status (IPAQ), amount of leisure time spent as inactive (IPAQ) and barriers to physical activity. Most of the socio-economic and health characteristics added to the study questionnaire were tested in previous studies. (Note 6), (Note 7)

2.4 Data Collection

Participants were recruited through the dissemination of a secure online Whats AppTM questionnaire through an advertisement on Whats AppTM social and community networks that further expanded the distribution of the online survey. Data were collected by means of an anonymous self-administered English-language questionnaire for the abridged version of the IPAQ. (Note 9) The research team added a simple amendment to IPAQ in the introduction of the questionnaire by adding a sentence about the COVID-19 situation that occurred at the time of data collection. Data collection was stopped when no further responses were recorded in the Qualtrics for one-week observation.

2.5 Statistical Analysis

The data was analysed using IBM SPSS 20. An initial descriptive analysis was conducted to summarize and categorize characteristics of demographic, physical activity and barriers realty to physical activity data. Physical activity scores were calculated according to the guidelines for the management and analysis of IPAQ data. (Note 8) The computation process was done at three steps. The first step aimed at achieving the METs of three types of physical activity (vigorous, moderate and walking) as follows: vigorous (8.0 X minutes of vigorous activity X days of vigorous activity), moderate (4.0 X minutes of moderate level activity X days of moderate level activity) and walking (3.3 X minutes of walking time X days of walking time). The second step was to calculate the total physical activity MET-minutes/week through obtaining the sum of the METs of three types of physical activity- intensity: MET-vigorous+ MET-moderate+ MET-walking. The third step was to classify participants according to three levels of physical activity (low, moderate, high) based on the criteria for each level of physical activity described in the IPAQ guidelines. (Note 8)

Association between two categorical variables was tested using the Chi-squared test. Logistic regression analysis was used to compute adjusted odds ratios for each variable. *P*-values of less than 0.05 were considered significant. The analysis focused on the score and level of physical activity, which were calculated. The significance of 5% was considered statistically significant and 95%

confidence intervals were provided, when applicable.

2.6 Ethics and Permission

The School of Health and Related Research of the Ethics Committee at the University of Sheffield (application number 034666) granted ethical approval. Prospective participants have received a backgrounder with the online survey link. Completing and returning the questionnaire constitutes consent for participation in the study. To ensure confidentiality, all returned responses were sent to a link in Qualtrics and the data was stored on a password-protected electronic form.

3. Results

3.1 Profile of Participants

Out of the two hundred and fifty five students who responded to the survey, two hundred and forty (94%) of them completed the data for all variables.

The mean age of the study population was centrally located at 22.76 years (SD 4.26) with a median of 22 years (IQR: 20-23). There was a statistically significant difference ($p < 0.05$) in the mean age of males (23.36) and female (22.17) respondents. Ninety percent (194/214) were between 18 and 25 years of age. There were more female respondents (61%) compared to male respondents (39%). The majority of respondents (123/210) were in years 4 to 6 of their academic studies, whilst 73% (157/216) were attending a Government institution. Twenty five percent (54/219) were members of a youth or sports club, 6% (15/239) reported having a chronic disease and 6% (13/233) declared themselves as smokers (Table 1).

Table 1. Sample Characteristics by Socio-Demographic, Health Status and Physical Activity Status

Variable	Male		Female		Study Population	
	Number	Percentage	Number	Percentage	Number	Percentage
Age						
18-21	29	34.12%	61	47.66%	90	42.06%
22-25	44	51.77%	60	46.12%	104	48.59%
26-29	3	3.53%	1	0.78%	4	1.87%
> 30	9	10.60%	7	5.46%	16	7.48%
Mean Age	85	23.36*	128	22.17	213	22.65
Academic Year						
1 to 3	30	36.59%	52	41.94%	82	39.05%
4 to 6	50	59.85%	73	47.49%	123	58.57%
7 to 9	3	3.36%	2	1.36%	5	2.38%
Type of University						

Government	80	94.12%	77	58.59%	157	72.69%
Private	5	5.88%	54	41.41%	59	27.31%
Member of youth/sports club						
Yes	35	40.70%	19	12.98%	54	24.66%
No	51	59.30%	114	87.02%	165	75.34%
Family income						
Not enough	2	2.33%	11	8.46%	13	5.91%
Hardly enough	25	29.07%	18	12.31%	43	19.55%
Saves	59	68.60%	105	79.23%	164	74.55%
Chronic diseases						
Yes	9	91.86%	6	4.55%	15	6.28%
No	79	8.14%	125	95.45%	224	93.72%
Smoking						
Yes	5	5.89%	8	2.31%	13	5.58%
No	81	94.19%	127	97.69%	220	94.42%
Body Mass Index						
Underweight	13	9.30%	15	11.36%	28	11.67%
Normal	44	51.17%	92	61.36%	136	56.66%
Overweight	18	19.53%	21	19.70%	49	21.26%
Obese	16	20%	13	7.58%	33	10.41%
Mean body mass index	84	29.36*	129	23.4	213	25.79
Self-Perceived weight						
Less than normal	12	14.29%	17	12.98%	32	13.50%
Normal	45	53.57%	79	60.31%	136	57.38%
Higher than normal	27	32.14%	35	26.72%	68	29.11%
Self-perceived physical activity						
Inactive	26	30.23%	34	25.95%	67	28.03%
Medium	47	54.65%	87	66.41%	146	61.09%
Highly active	13	15.12%	10	7.63%	26	10.88%
Maximum Exercise Tolerance (MET)	47	1246.89*	53	1064.09	100	1150.01

* -p<0.05.

The mean body mass index of the study population was 25.79 (SD: 20.76) with the median body mass index being 22.86 (IQR: 20.34-26.37). Sixty eight percent (164/246) were either underweight or had a normal body mass index. There was a statistically significant ($p<0.05$) difference between body mass index (29.36) of males compared to females (23.47). Seventy percent of respondents (168/236) perceived their weight to be normal or below normal, whilst 28% (67/239) perceived themselves to be

inactive, 61% (146/239) and 11% (26/239) perceived themselves to be moderate and highly active in terms of self-perceived physical activity (Table 1).

3.2 Prevalence and Pattern of Physical Activities

According to International Physical Activity Questionnaire (IPAQ) analysis guideline, Overall, 44% (47/107) were classified as highly active (a minimum total physical activity of at least 1500 MET-minutes/week), 30% (32/107) as moderately active (a minimum total physical activity of at least 600 MET-minutes/week) and 26% (28/107) as lowly active (a minimum total physical activity of less than 600 MET-minutes/week) (Figure 1). There was no statistically significant difference between the mean METs for females (1064.09) versus males (1264.89). In addition, more than half of the Omani students in this study did vigorous, moderate and walking physical activity in the last 7 days (54.1%, 34.6% and 47.1%, respectively) (Figure 2). The percentage for those not doing vigorous physical activity was the lowest among the three types of the above physical activity intensity (32.7%) (Figure 2).

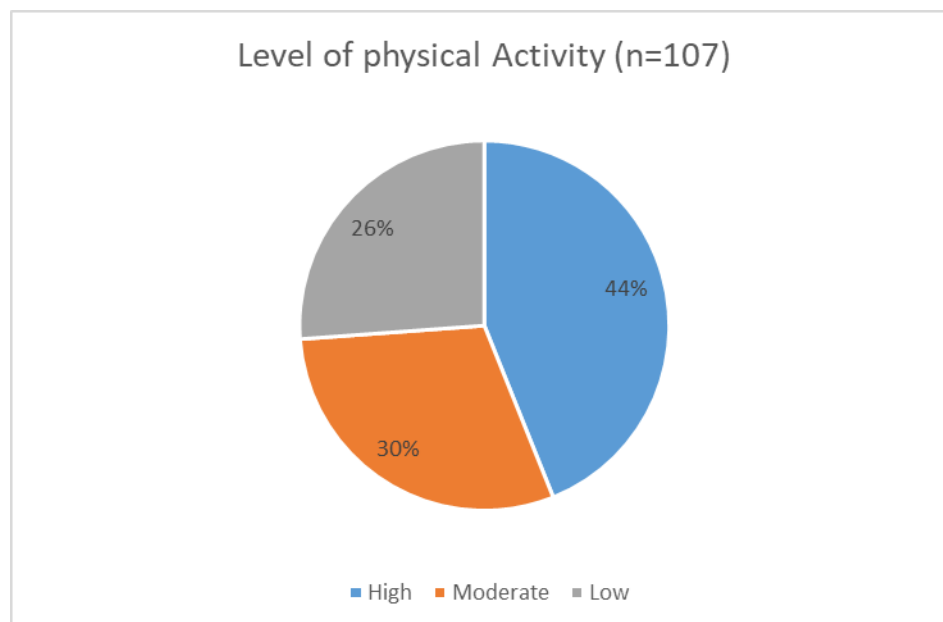


Figure 1. Level of Physical Activity

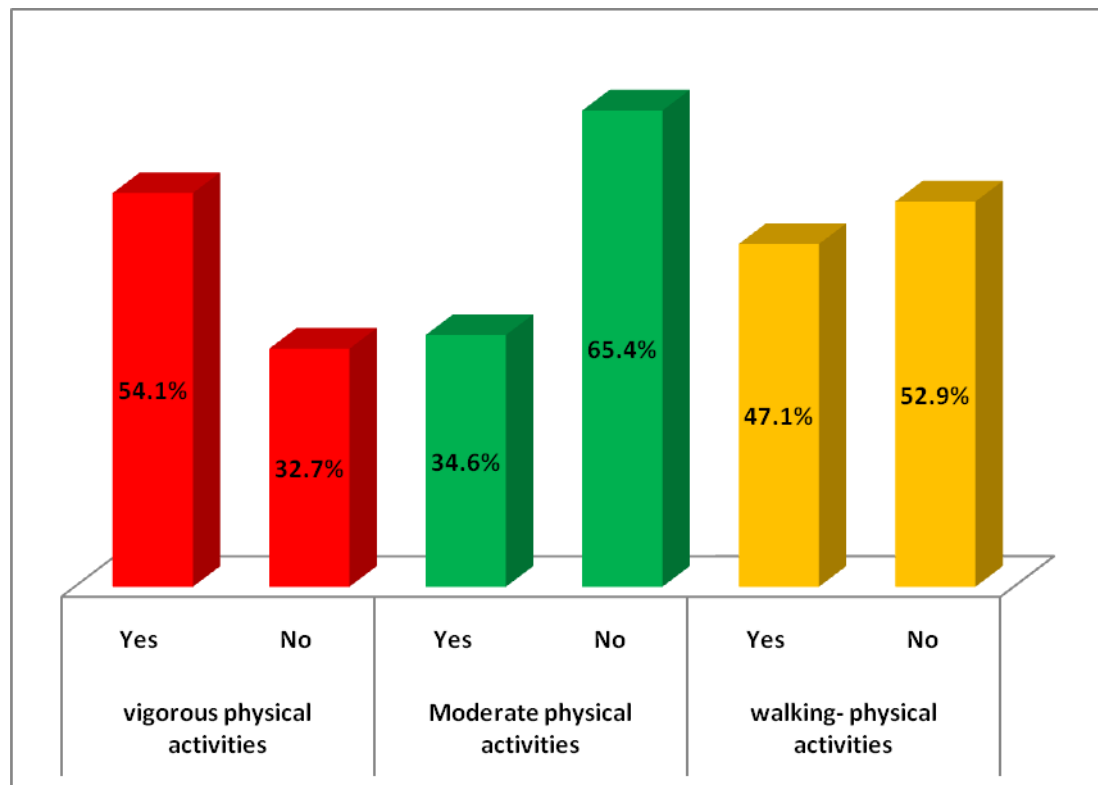


Figure 2. Percentage Distribution of Omani Student by Physical Activity Type

3.3 Predictors of Physical Activity

Younger students (≤ 22 years), male students, respondents with positive perceptions of weight (normal or below) and self-perceived physically active were more likely to engage in moderate to high activity physical exercise. Students in university for ≥ 4 years (OR: 2.69) and students that were members of sports or youth clubs (2.76) were significantly more likely to engage in moderate or highly active exercise. After multivariate analysis, only students in university ≥ 4 years (OR: 3.83) were significantly more likely to engage in moderate or highly active physical exercise.

Table 2. Predictors of Physical Activity

Moderate to Highly Active	Bivariate Analysis		Multivariate analysis	
	Odds ratio	95% Confidence interval	Odds ratio	95% Confidence interval
Age				
≤ 22 versus ≥ 22 years	1.61	0.65-3.94	0.61	0.18-2.02

Gender				
Male	versus			
female		1.55	0.65-3.72	2.23
				0.80-6.19
Academic year				
≥4	versus	≤4th		
year		2.69*	1.05-6.99	3.83*
				1.12-13.15
Government				
institution				
versus private		0.51	0.15-1.51	0.42
				0.13-1.41
Youth/Sport				
club				
membership		2.76*	0.91-9.41	2.02
				0.60-6.76
Non-smoker				
versus smoker		0.63	0.10-12.50	
Chronic				
Disease (yes)		0.24	0.22-1.42	0.28
				0.47-1.66
Body mass				
index				
(overweight/obese				
versus				
normal)		0.87	0.34-2.18	
Self-perceived				
weight (normal				
or				
underweight)		2.97	0.73-14.38	3.22
				0.82-12.79
Self-perceived				
activity				
(moderate to				
high)		1.46	0.59-3.62	

* p<0.05.

3.4 Barriers to Physical Activity

The number and percentages of students who mentioned any barriers for doing physical activity are presented in the Table 3. The Table shows that lack of motivation (67%), lack of time (64%), laziness (64%), other priorities than sports (63%) and very hot or cold weather (61%) were the top five barriers to doing the physical activity. On the other hand, weak body (31%), fear of the deterioration of a chronic disease (31%), not knowing the importance of physical activity (31%), fear of injuries (30%)

and no one takes care of children during absence (24%) where the lowest five barriers to doing the physical activity ranked by the students.

Table 3. Percentage of Physical Activity Barriers

Reason	Not an obstacle		Obstacle		Total
	N	%	N	%	
Lack of motivation	65	32.7	134	67.3	199
Lack of (tight) time	70	35.7	126	64.3	196
Lazy	67	35.8	120	64.2	187
I have other priorities in my life that are more important than sports	68	36.8	117	63.2	185
Very hot or cold weather (weather)	72	38.9	113	61.1	185
Absence or (lack of) physical energy	76	39.0	119	61.0	195
Lack of support and encouragement from others	73	40.1	109	59.9	182
he lack of suitable and nearby places	80	40.8	116	59.2	196
Lack of sports skills	88	44.2	111	55.8	199
Lack of programs that suit my physical efficiency	84	45.4	101	54.6	185
There is no friend who encourages me	86	46.7	98	53.3	184
Lack of transportation and travel	96	51.9	89	48.1	185
Lack of safe places to practice physical activity	101	52.1	93	47.9	194
Not feeling comfortable when exercising	99	52.4	90	47.6	189
I have a feeling of not winning and achieving what I am looking for	103	53.1	91	46.9	194
Physical activity causes pain (soreness) in my body	103	53.4	90	46.6	193
I do not find in myself the ability to play sports with adequate efficiency	103	55.4	83	44.6	186
High cost (expensive)	107	55.7	85	44.3	192
Failure to achieve goals (win) in previous times	112	57.1	84	42.9	196
Bad previous experience with physical activity	131	64.2	73	35.8	204
Preferring to stay away from the places of physical activity	130	66.3	66	33.7	196
My body is weak and cannot tolerate sports	134	68.7	61	31.3	195
Fear of the deterioration of a chronic disease	136	69.0	61	31.0	197
Not knowing the importance of physical activity	129	69.4	57	30.6	186
Fear of injuries	138	69.7	60	30.3	198
No one takes care of children during my absence	148	76.3	46	23.7	194

4. Discussion

The present study demonstrated that slightly more than one-fourth (26%) of Omani university students were physically inactive. Forty four percent engaged in highly active physical activity (>1500 MET-minutes/week) followed by 30% who engaged in moderate physical activity (equal or >600 MET-minutes/week). The levels of physical activity among university students in Oman were higher than that of other Gulf countries such as Saudi Arabia (Note 6) who used the same questionnaire (short-form IPAQ) and recorded that more than half of university students were inactive. In Kuwait (Note 11), researchers used the long-form IPAQ (consisting more details as compared to the short-form) questionnaire and reported 40% of college students not doing physical activity. However, Gulf countries shared common features of the built environments and cultural characteristics, the variation in the percentage of physical inactivity among university students could correlate primarily to the limitation of the current study represented with the small sample of 240 participants compared to the large sample of more than one thousand of participants used in Saudi and Kuwaiti studies. Globally, China and Brazil showed that one-third of their university students and more than half of them in Canada were physically inactive. (Note 6)

Although physical inactivity is considered as an important risk factor, which correlates with the increasing burden of chronic diseases and enrolled with greater attention from the Omani government in the way to increase awareness among the population, there is still ignorance of many people of physical inactivity significance. There is no gender or age group difference with regard the type of physical activity level. Compared to other studies for the same target group, the percentage was highest (52.0%) in the moderate level of physical activity among Mansoura university students in Egypt and reported less than 40% with the high level of physical activity (Note 7) as compared with 44% of high level shown in the current study (Figure 1). The participation of Omani university students was mostly with vigorous-intensity activities, which include more than half of the participants (54.1%) (Figure 2) whereas, it was found to be only 20% by the study conducted in Saudi Arabia. (Note 6) Another study in the USA found that nearly 50% of the university students not engaged in any vigorous-intensity types of physical. (Note 12) In addition, Staten et al. (2005) (Note 13) demonstrated that about 40% of university students participate in a vigorous and moderate-intensity type of physical activity.

Focusing on the analysis of the risk factors associated with physical activity level, this study showed that there is a significant association of the physical activity level (Moderate and high level) with students in university for ≥ 4 years and having a membership in a sports club (Table 2). On the other hand, this study showed that there is no significant association of the physical activity level with other health status characteristics of the student such as having smoking and chronic disease status and the bodyweight classifications. In addition, socio-demographic features of university students in Oman like having a membership in youth and sport clubs, type of the university or college (government or private) did not show as risk factors for physical inactivity. The previous study, which was conducted in Egypt, reported a significant association of students having a membership in sport clubs and belonging to high

socioeconomic status with a high level of physical activity. (Note 7) On the other hand, Al-Refae and Al-Hazzaa (2001) (Note 14) stated that low family income was related to a low level of physical activity.

Exploring the perceived barriers among university students in Oman in this study indicated that less than half of the participants did not report any barriers of doing their recommended amount of physical activity. On the other hand, more than half of students stated that lack of motivation, lack of time, feeling lazy, having other priorities in their life and unsuitable weather are the main barriers preventing them from doing their daily physical activity. In addition, other barriers came down on the list including children and family responsibilities, lack of awareness about physical activity benefits, having a weak body and fearing from health deterioration due to chronic diseases. Similarly, the most reported barriers to physical activity among university students, which were mentioned in previous studies included; lack of the time, family responsibilities, unsupportive social environments and parents prefer academic achievement than exercises (Note 14), (Note 15).

5. Conclusion

More than a quarter (26%) of surveyed Omani university students were physically inactive which has the potential to have a negative effect on their health and well-being and has a compounded effect on health outcomes, health expenditure, personal earning potential and the overall economy of the country. Healthy lifestyles that include creating a conducive environment and promotion of physical activity, not only among students themselves but also among their parents and caregivers, is essential for improving health outcomes in Oman.

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Notes

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