Assessment of Physical Activity among Female Undergraduate Students of Umm Al-Qura University

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Abstract

Background: Whereas being physically active has well-documented benefits, physical inactivity causes major non-communicable diseases. This study assessed physical activity levels among female undergraduate students at Umm Al-Qura University (UQU) in Saudi Arabia.

Methods: This cross-sectional study was conducted during UQU's first semester, spanning September to December 2019, and involved 516 female undergraduate students aged 18 to 27 years (mean age ± SD: 22.22 ± 1.8 years). The participants were administered the online version of the International Physical Activity Questionnaire.

Results: Among the participants, 322 (62%) had a total physical activity of 236.6 ± 141.3 MET (metabolic equivalent of task) minutes/week, indicating engagement in light-intensity physical activity; 184 (35.7%) had 2997.0 ± 613.3 MET minutes of activity per week, equivalent to moderate-intensity physical activity; and 10 of the participants registered 3193.7 ± 218.1 MET minutes of activity per week, pointing to vigorous physical engagement.

Conclusion: The female undergraduate students exhibited low rates of physical activity. Understanding these findings may increase awareness of implications for the essential development of government initiatives, especially Saudi Arabia's Quality of Life Program 2030, which is aimed at increasing physical activity levels in all ages.

Keywords: *female university students, International Physical Activity Questionnaire, physical activity, subjective assessment, metabolic equivalent of task*

Introduction

In recent years, chronic diseases, such as hypertension, coronary heart disease, and diabetes, have become primary causes of morbidity and mortality in most parts of the world.[1,2] This phenomenon resulted largely from urbanization-related reductions in people's physical activity,[3] which is defined by the World Health Organization (WHO) as "any bodily movement produced by skeletal muscles that require energy expenditure."[4] Several of the latest studies have shown a positive association between engagement in moderate-intensity physical activity for at least 30 minutes every day and a greater than 50% reduction in the risk of developing the aforementioned conditions as well as a 20% to 30% reduction in the risk of premature mortality.[5, 6] Whereas physical activity is well-known to engender benefits, physical inactivity causes an estimated 3.2 million deaths worldwide,[7] making it one of the five main health threats in many countries.[8]

In the Kingdom of Saudi Arabia (KSA), recent economic growth has also been accompanied with chronic disease problems related to physical inactivity, diet, and other behavioral lifestyle changes associated with affluence.[9] These behaviors, together with the increased use of technology and the changing patterns of transportation, can lead to physical inactivity and increased sedentary time.[9] This progressively sedentary lifestyle occurs across all domains, particularly given the increasing popularity of computer usage, work-related

sitting time, and video game playing.[10] The WHO recommends that adults aged 18 to 64 years participate in either at least 150 minutes of moderate-intensity aerobic physical activity, at least 75 minutes of vigorous aerobic physical activity, or an equivalent combination of both throughout a week to improve cardiorespiratory and muscular fitness, enhance bone health, and reduce the risk of chronic disease development.[11]

A population-based, cross-sectional study in the KSA showed a low prevalence of physical activity (men = 6.1%, women = 1.9%),[12] with 60% of the Saudi adult population considered physically inactive; this percentage is the highest among Gulf Cooperation Countries.[13] In terms of gender, previous nationwide studies estimated that physical inactivity ranges between 44.5% to 66.6% and 72.9% to 78.1% for males and females, respectively.[9] Studies likewise indicated that 84% of students who remain physically active during their university years are likely to establish habitual physical activity throughout their lifetimes.[14] By contrast, of students who are physically inactive during this period, 80% carry on with their sedentary habits after graduating from university.[14]

With consideration for the above-mentioned issues, assessing the physical activity of universities students using subjective or objective measures may enable an accurate estimation of this age group's health status and subsequently provide evidence that can inform changes in lifestyle policy and culture. Such data can also foster the development of strategies that can help them make physical activity part of their daily lives. Thus, the objective of this study was to assess the physical activity levels of female undergraduate students at Umm Al-Qura University (UQU) in the KSA.

Materials and Methods

Undergraduate female students at UQU (n = 516) with ages ranging from 18 to 27 years (mean age ± SD: 22.22 ± 1.8 years) were invited to participate in the study, which covered a semester running from September to December 2019. A convenience sample was recruited through email invitations, and WhatsApp groups were created to provide an avenue where the students could complete a short online questionnaire (approximately 15 to 25 minutes to complete). The questionnaire consisted of three sections: a section on general characteristics, including age, height, and weight; one focusing on social status and educational level; and a section concentrating on physical activity levels.

Physical activity was assessed using the short form of the Arabic version of the International Physical Activity Questionnaire (IPAQ, available at www.ipaq.ki.se). The participants were required to report the frequencies (days as well as hours and minutes per week) and ongoing levels of intensity (light, moderate, and vigorous) with which they engaged in physical activity during the last seven days. The metabolic equivalent of task (MET) method was used in the IPAQ scoring, in which three levels of intensity were assigned to MET estimates before the weekly total physical activity (MET minutes/week) of the students was calculated. According to this protocol, then, total physical activity was classified into light-intensity physical activity (less than 600 MET minutes/week), moderate-intensity physical activity (≥600 to <3000 MET minutes/week), and vigorous physical activity (≥3000 MET minutes/week).

The participants consisted of only female undergraduate students at UQU and those who followed the IPAQ guidelines. The study excluded post-graduate students, and students who returned incomplete IPAQ or whose questionnaires had missing values. Data were entered into Google Forms before being transferred into Microsoft Excel sheets by an independent research assistant, after which the data were reviewed and analyzed using the Statistical Package for the Social Sciences for Windows (version 26.0, IBM SPSS Inc., Chicago, IL). Results were expressed in descriptive and frequency statistics (means, standard deviations [SDs], and percentages) for categorical variables.

Results

Table 1 lists the descriptive statistics (means and SDs) regarding the participants. The study involved 516 female students aged 18 to 27 years (mean age ± SD: 22.22 ± 1.8 years), among whom 55.2% belonged to the age group of 22 to 23 years. The Body Mass Indices (BMIs) of the participants ranged from 15.4 to 46 kg/m^2, with the mean BMI being 27.2 ± 5.2 kg/m^2.

Table 1: Participants' demographic characteristics (*n* = 516)

Variables	Minimum	Maximum	Mean ± SD
Age (years)	18	27	22.22 ± 1.8
Height (cm)	150	189	172.0 ± 8.4
Weight (kg)	48	128	10.2 ± 14.7
BMI (kg·m-2)	15.4	46.0	27.2± 5.2

On the basis of the BMI data, approximately 37.4% of the students were overweight, whereas 31.4% exhibited a normal weight. Obese participants accounted for 28.3% of the sample, and the remaining 2.9% were underweight (Table 2). With respect to social status, the majority of the participants (473 or 91.7%) were single at the time of the study, and 34 (6.6%) were married. In terms of educational levels, 459 (89%) participants had bachelor's degrees, and 57 (11%) acquired diplomas.

Table 2: Body mass index category, social status, and educational level (*n* = 516)

Categorical variables	Frequency n (%)
Body mass index category a	
Underweight	15 (2.9%)
Normal weight	162 (31.4%)
Overweight	193 (37.4%)
Obese	146 (28.3%)
Social status	
Single	473 (91.7%)
Married	34 (6.6%)
Other	9 (1.7%)
Educational level	
Bachelor	459 (89%)
Diploma	57 (11%)

[a] BMI groups were defined using the WHO classification system being; underweight

< 18.5 kg/m^2, normal ≥ 18.5–24.9 kg/m^2, overweight ≥ 25–29.9 kg/m^2, and obese ≥ 30 kg/m^2.

The varying physical activity levels measured using the IPAQ are presented in Table 3. The descriptive statistics indicated that 322 (62%) participants had a total physical activity of 236.6 ± 141.3 MET minutes/week, categorizing the engagement of these individuals under light-intensity physical activity. Of the sample, 184 (35.7%) participants registered 2997.0 ± 613.3 MET minutes/week, corresponding to moderate-intensity physical activity, and 10 recorded 3193.7 ± 218.1 MET minutes/week, indicating involvement in vigorous physical activity.

Table 3: Physical activity levels as reflected by MET minutes/week (*n* = 516)

Physical activity levels	n (Mean ± SD)
Light-intensity physical activities	322 (236.6 ± 141.3)
Moderate-intensity physical activity	184 (2997.0 ± 613.3)
Vigorous-intensity physical activities	10 (3193.7 ± 218.1)

Discussion

As previously stated, most of the participants were unmarried, had bachelor's degrees, and had BMIs that classified them under the overweight category. The BMIs ranged from 15.4 to 46 kg/m^2, with the mean BMI being 27.2 ± 5.2 kg/m2—a value higher than those observed in previous studies involving similar target populations in the KSA.[15–18]

The results indicated that 62% of the participants engaged in light-intensity physical activity, thereby failing to meet the physical activity recommendations of the WHO. This study is not the first to reveal a prevalence of physical inactivity among female college students in the KSA, but it is distinguished from previous work in that it emphasizes the importance of specifying the level of physical activity among such a sample. Similar results were derived by Desouky et al.[19], who administered the long version of the IPAQ to female university students of the Health Colleges at Taif University in the KSA. The authors reported that many (61.7%) of the respondents were physically inactive. Likewise, a recent study involving female college students at Taibah University in the KSA uncovered that more than half of the participants do not satisfy recommended levels of physical activity.[16] Research on 831 females students at King Khalid University located in the southwestern region of the KSA employed the short form Arabic IPAQ and found that 58.8% of the participants are physically inactive.[20] These findings support the hypothesis that adolescents who cannot meet public health recommendations for physical engagement among their age groups sustain a physically inactive lifestyle as they grow older. Al-Hazzaa[9] reviewed studies on inactivity prevalence and perceived barriers to active living among the Saudi population and discovered that female adolescents are relatively more inactive physically than males, with levels reaching 43% to 91% versus 26% to 85%, respectively.

Given the well-documented full-health benefits of being physically active, individuals must involve themselves in moderate to vigorous physical activities, such as jogging, bicycling, and swimming. The results of the current research and those of previous studies indicated high inactivity rates among female students, driving researchers to focus on identifying the kinds of physical activities that females choose to engage in and the perceived barriers to such engagement. Several studies identified the following major reasons for inactivity among females: limited opportunities to engage in moderate to vigorous physical activity; increasing amounts of time spent on sedentary behaviors; lack of time, money, and support from family and friends; pain when exercising; many lifestyle policies; cultural and civilization-related factors; and individual economic-related reasons.[9, 21]

Conclusion

The results showed low rates of physical activity among female undergraduate students of UQU. Of the participants, 62% did not satisfy the WHO physical activity recommendations. Understanding these findings may increase awareness of implications for the essential development of government initiatives, especially Saudi Arabia's Quality of Life Program 2030, which is aimed at increasing physical activity levels in all ages.

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Ethical Clearance: This study was ethically approved by the ethics committee of Umm Al-Qura University.

References

1. Wild S, Roglic G, Green A, Sicree R, King H. Global prevalence of diabetes: estimates for the year 2000 and projections for 2030. Diabetes care. 2004;27(5):1047-53.
2. Matheus ASdM, Tannus LRM, Cobas RA, Palma CCS, Negrato CA, Gomes MdB. Impact of diabetes on cardiovascular disease: an update. International journal of hypertension. 2013;2013.
3. Mandil AM, Alfurayh NA, Aljebreen MA, Aldukhi SA. Physical activity and major non-communicable diseases among physicians in Central Saudi Arabia. Saudi Med J. 2016;37(11):1243.
4. Pettee G, Morrow J, Woolsey A. Framework for physical activity as a complex and multidimensional behavior. J Phys Act Health. 2012;9(Suppl 1), S11-S18.
5. Dunstan DW, Owen N. New exercise prescription: don't just sit there: stand up and move more, more often: comment on" sitting time and all-cause mortality risk in 222 497 Australian adults. Arch Intern Med. 2012;172(6):500.
6. Gill JM, Cooper AR. Physical activity and prevention of type 2 diabetes mellitus. Sports Med. 2008;38(10):807-24.
7. Lim SS, Vos T, Flaxman AD, Danaei G, Shibuya K, Adair-Rohani H, et al. A comparative risk assessment of burden of disease and injury attributable to 67 risk factors and risk factor clusters in 21 regions, 1990–2010: a systematic analysis for the Global Burden of Disease Study 2010. The lancet. 2012;380(9859):2224-60.
8. Lee I-M, Shiroma EJ, Lobelo F, Puska P, Blair SN, Katzmarzyk PT, et al. Effect of physical inactivity on major non-communicable diseases worldwide: an analysis of burden of disease and life expectancy. The lancet. 2012;380(9838):219-29.
9. Al-Hazzaa HM. Physical inactivity in Saudi Arabia revisited: a systematic review of inactivity prevalence and perceived barriers to active living. International journal of health sciences. 2018;12(6):50.
10. Matthews CE, Chen KY, Freedson PS, Buchowski MS, Beech BM, Pate RR, et al. Amount of time spent in sedentary behaviors in the United States, 2003-2004. Am J Epidemiol. 2008;167(7):875.
11. Haskell W, Lee I, Pate R, Powell K, Blair S, Franklin B, et al. Physical activity and public health: updated recommendation for adults from the American College of Sports Medicine and the American Heart Association. Circulation. 2007;116(9):1423-34.
12. Mabry R, Koohsari MJ, Bull F, Owen N. A systematic review of physical activity and sedentary behaviour research in the oil-producing countries of the Arabian Peninsula. BMC public health. 2016;16(1):1003.
13. Alahmed Z, Lobelo F. Physical activity promotion in Saudi Arabia: A critical role for clinicians and the health care system. Journal of epidemiology and global health. 2018;7:S7-S15.
14. Sparling PB, Snow TK. Physical activity patterns in recent college alumni. Res Q Exerc Sport. 2002;73(2):200-5.
15. Jalloun RA, Surrati AM. Physical Activity Pattern Among Female College Students at Taibah University. International Journal of Nutrition, Pharmacology, Neurological Diseases. 2020;10(3):137.
16. Majeed F. Association of BMI with diet and physical activity of female medical students at the University of Dammam, Kingdom of Saudi Arabia. Journal of Taibah University Medical Sciences. 2015;10(2):188-96.
17. Al-Rethaiaa AS, Fahmy A-EA, Al-Shwaiyat NM. Obesity and eating habits among college students in Saudi Arabia: a cross sectional study. Nutrition journal. 2010;9(1):39.
18. Ghaith MM, Ibrahim MO. Dietary habits, eating practices and lifestyle pattern as predictors of increased waist circumference amongst University of Umm Al-Qura female students: A cross-sectional study (Obesity Associated Risk Factors). Medical Science. 2020;24(101):351-9.
19. Desouky DS, Omar MS, Nemenqani DM, Jabbar J, Tarak-Khan NM. Risk factors of non-communicable diseases among female university students of the Health Colleges of Taif University. International Journal of Medicine and Medical Sciences. 2014;6(3):97-107.

20. Awadalla N, Aboelyazed A, Hassanein M, Khalil S, Aftab R, Gaballa I, et al. Assessment of physical inactivity and perceived barriers to physical activity among health college students, south-western Saudi Arabia. East Mediterr Health J. 2014;20(10):596-604.

21. Al-Hazzaa HM, Abahussain NA, Al-Sobayel HI, Qahwaji DM, Musaiger AO. Physical activity, sedentary behaviors and dietary habits among Saudi adolescents relative to age, gender and region. International Journal of Behavioral Nutrition and Physical Activity. 2011;8(1):140.