# Physical Activity and Its Related Factors in Southeast Iran

**Article** *in* Shiraz E Medical Journal · September 2019

DOI: 10.5812/semj.87414

CITATION
1

READS
48

**3 authors**, including:

Mohsen Momeni
Kerman University of Medical Sciences
**28** PUBLICATIONS **213** CITATIONS
SEE PROFILE

Mina Danaei
Kerman University of Medical Sciences
**31** PUBLICATIONS **324** CITATIONS
SEE PROFILE

Shiraz E-Med J. 2019 October; 20(10):e87414. doi: 10.5812/semj.87414.

Published online 2019 September 14. **Research Article**

# Physical Activity and Its Related Factors in Southeast Iran

Mohsen Momeni [1], Mina Danaei [2, *] and Arezoo Saeidifar [3]

[1] Social Determinants of Health Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran
[2] Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran
[3] Health Services Management Research Center, Institute for Futures Studies in Health, Kerman University of Medical Sciences, Kerman, Iran

[*] *Corresponding author*: Assistant Professor of Community Medicine, Neuroscience Research Center, Institute of Neuropharmacology, Kerman University of Medical Sciences, Kerman, Iran. Email: danaei.mina@gmail.com

**Received** 2018 December 11; **Revised** 2019 February 10; **Accepted** 2019 February 24.

## Abstract

**Background:** Increasing the level of physical activity (PA) is an important strategy for reducing the burden of non-communicable diseases.
**Objectives:** This study aimed at addressing the level and related factors of PA among adults in Kerman.
**Methods:** This cross-sectional study was performed among 1000 adults, using a multistage sampling method. The short form of the International Physical Activity Questionnaire (IPAQ) was used. Chi-square, one-way ANOVA, and ordinal regression tests were used to assess the correlation between independent variables (age, gender, level of education, income, employment, marital status, and living in deprived areas) and level of PA.
**Results:** The median of PA was 1584 MET-minutes/week. The level of PA was low in 25.6%, moderate in 44.4%, and vigorous in 30% of participants. Participants with higher ages (OR = 0.98; P = 0.008), those with pre-college education (OR = 0.63; P = 0.027), and students (OR = 0.50; P = 0.019) had a lower probability to be in a high level of PA. Men (OR = 2.17; P < 0.001) and those with an average income (OR = 1.53; P = 0.027) had a higher probability to be in a high level of PA.
**Conclusions:** The level of PA is relatively low in Kerman. It seems that increasing awareness of the benefits of PA, creating a positive attitude towards PA, providing healthy transportation options, increasing PA facilities including sports spaces and enhancing social support are the most important strategies for increasing the level of PA in the Iranian society.

*Keywords:* Physical Activity, Prevalence, Risk Factors

## 1. Background

Today, non-communicable diseases (NCDs) such as cardiovascular diseases (CVD), diabetes mellitus (DM), chronic obstructive pulmonary diseases (COPD), and cancer are the main cause of death in the world, especially in developing countries (1-3). Based on the report of World Health Organization (WHO) in 2017, NCDs are responsible for 70% of deaths worldwide, and these diseases kill 15 million people between the ages of 30 and 70 each year (4). Recent evidence indicates that CVD, DM, COPD, and cancer are responsible for 82.2% of deaths in Iran. Also, NCDs' mortality has increased by14.5% over the past 20 years in Iran (5).

According to the literature, the most important risk factors of NCDs worldwide include tobacco use, hypertension, overweight and obesity, air pollution, alcohol use, drug use, unhealthy diet, and physical inactivity (5-7). Regular and adequate physical activity (PA) is a protective factor for NCDs such as CVD, DM, stroke, and breast and colon cancer. It also prevents some NCDs risk factors such as hypertension, overweight, and obesity and can improve mental health, quality of life, and well-being and delay the onset of dementia (8, 9).

Nevertheless, the current global situation of PA is not appropriate and the increase in PA is slow (8, 10). Based on international reports, 23% of adults and 81% of adolescents are physically inactive. Physical inactivity in adults is highest in the Eastern Mediterranean and the Americas and is lowest in Southeast Asia. Also, the level of PA is lower in girls, women, older adults, people with disabilities and chronic diseases, and people who live in high-income countries (8, 11).

National studies have shown that the prevalence of low PA is high among Iranian adults, especially women, those with low socioeconomic status, and older citizens (12, 13).

## 2. Objectives

In order to implement effective programs for prevention of NCDs in the Iranian population, policymakers need

to identify the current status of PA. In this study, we described the level and related factors of PA among adults in a middle part of Iran (Kerman).

## 3. Methods

We conducted this population-based cross-sectional survey from January to May 2018, in Kerman, the capital city of Kerman province. The city of Kerman is the largest city in southeast Iran with a population of nearly 800000.

The inclusion criteria included individuals age $\geq$ 18-year-old and residing in Kerman $\geq$ 5 years. A thousand people were enrolled in the study using a multistage cluster sampling method. Based on municipality areas, Kerman was divided into four regions. In each region, several blocks were selected randomly. In each block, some houses were selected randomly, and finally, in each house, one participant was chosen. Considering the gender ratio in Kerman, 500 men and 500 women participated in the study. Door-to-door and face-to-face interviews were conducted by trained interviewers. Verbal informed consent was received from each participant.

The level of PA was assessed by a valid and reliable short form of the International Physical Activity Questionnaire (IPAQ). This questionnaire included seven questions about four domains, including vigorous PA, moderate PA, walking, and sitting in the past seven days (14). The Metabolic Equivalents (METs) was used to estimate total PA per week for each participant. MET was calculated according to the short form IPAQ guideline using this formula:

1. Walking MET-minutes/week = 3.3 $\times$ walking minutes $\times$ walking days.

2. Moderate MET-minutes/week = 4.0 $\times$ moderate-intensity activity minutes $\times$ moderate days.

3. Vigorous MET-minutes/week = 8.0 $\times$ vigorous-intensity activity minutes $\times$ vigorous-intensity days.

4. Total PA MET-minutes/week = sum of walking + moderate + vigorous MET-minutes/week scores.

Then, METs were classified as weak (< 600 MET-minutes/week), moderate (600 - 3000 MET-minutes/week), and vigorous (> 3000 MET-minutes/week) (15). Socio-demographic characteristics including age, gender, income, employment status, level of education, marital status, and living in deprived areas were asked at the end of the questionnaire. The participants' income (Rials per month) was categorized as very low (< 5milion), low (5 to 15 million), moderate (15 to 25 million), and high (> 25 million).

Chi-square and one-way ANOVA tests were applied to assess the association between independent variables and the level of PA. Then, ordinal regression analysis was used to determine the predictors of PA. The level of significance was set to 0.05.

This study was approved by the Ethical Committee of Kerman University of Medical Sciences. The ethics approval code is IR.KMU.REC.1395.366.

## 4. Results

A total of 1000 participants were enrolled in this study. Due to the fact that 70 of the questionnaires were returned incomplete or filled with irrelevant data, a total of 930 questionnaires were finally analyzed (response rate: 93%). The age range of participants was from 18 to 88 (Mean $\pm$ SD: 34.04 $\pm$ 12.7). About half of the participants were women (50.9%), the majority were married (55.7%), employed (48.5%), university-educated (51.5%), and earned less than 15 million rails per month (55.6%) (Table 1).

The median (range) of PA was 1584 (0 - 10850) (men: 2106; women: 1356) MET-minutes/week with an interquartile range (IQR) of 594 - 3764 MET-minutes/week. The median reported sitting time was 300 minutes/day with an IQR of 240 - 480 minutes/day. The level of PA was low in 25.6%, moderate in 44.4%, and vigorous in 30% of the participants (Figure 1).

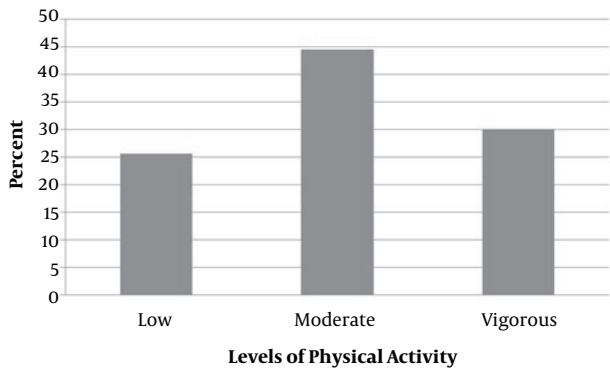


**Figure 1.** Description frequency the levels of physical activity

The results of the univariate analysis showed that there is a significant association between age, gender, marital status, level of education, income (P < 0.001), and living in a deprived area (P = 0.025) with the level of PA, whereas there is no significant association between employment status and the level of PA (P = 0.053) (Table 1).

Analytic results of ordinal regression model showed that there is a significant negative association between age and the level of PA (OR = 0.98; P = 0.008). Also, men compared to women (OR = 2.17; P < 0.001) and moderate-income compared to high-income (OR = 1.53; P = 0.027)

**Table 1.** Comparing Socio-Demographic Characteristics of Participants, According to Physical Activity Levels Using Chi-Square and One-way ANOVA

| Variables | No. (%) | Level of Physical Activity, % | | | P Value |
|---|---|---|---|---|---|
| | | Low | Moderate | Vigorous | |
| **Gender** | | | | | < 0.001 |
| Men | 457 (49.1) | 19.5 | 42.7 | 37.8 | |
| Women | 473 (50.9) | 31.5 | 46.1 | 22.4 | |
| **Marital status** | | | | | < 0.001 |
| Single | 361 (38.8) | 19.1 | 41.8 | 39.1 | |
| Married | 518 (55.7) | 28.8 | 46.3 | 24.9 | |
| Divorced / Widowed | 51 (5.5) | 38 | 44 | 18 | |
| **Level of education** | | | | | < 0.001 |
| Illiterate | 15 (1.6) | 46.7 | 33.3 | 20 | |
| < High school diploma | 143 (15.4) | 35.7 | 49 | 15.3 | |
| High school diploma | 293 (31.5) | 23.5 | 41.6 | 34.8 | |
| University | 479 (51.5) | 23.3 | 45.3 | 31.4 | |
| **Employment status** | | | | | 0.053 |
| Employed | 451 (48.5) | 25.1 | 44 | 30.9 | |
| Retired | 61 (6.6) | 24.6 | 57.4 | 18 | |
| Student | 183 (19.7) | 22.4 | 43.2 | 34.4 | |
| Housewife | 172 (18.5) | 31.6 | 45 | 23.4 | |
| Unemployed | 63 (6.8) | 23.8 | 36.5 | 39.7 | |
| **Level of income** | | | | | < 0.001 |
| Very low | 137 (14.7) | 35.8 | 40.9 | 23.3 | |
| Low | 380 (40.9) | 28.2 | 44.5 | 27.3 | |
| Moderate | 238 (25.6) | 17.6 | 44.5 | 37.9 | |
| High | 162 (17.4) | 21.6 | 47.5 | 30.9 | |
| **Living in deprived areas** | | | | | 0.025 |
| No | 757 (81.4) | 23.9 | 44.6 | 31.5 | |
| Yes | 173 (18.6) | 32.9 | 43.4 | 23.7 | |
| **Age, Mean ± SD** | | 36.28 ± 13.2 | 34.97 ± 13.1 | 30.77 ± 10.8 | < 0.001 |

had a higher probability to be in a high level of PA, however, those with pre-college education (under high school diploma) compared to those with a university education (OR = 0.63; P = 0.027) and students compared to the unemployed (OR = 0.50; P = 0.019) had a lower probability to be in a high level of PA. Marital status (P = 0.584) and living in deprived areas (P = 0.155) were not significantly associated with level of PA (Table 2).

## 5. Discussion

According to the results of this study, the median of PA was 1584 (men: 2106; women: 1356) MET-minutes/week and the level of PA was low in 25.6%, moderate in 44.4%, and vigorous in 30% of the participants. Results of the Third National Surveillance of Risk Factors of Non-Communicable Diseases (SuRFNCD-2007) showed that the median of PA was 1442 (men: 2394; women: 903) MET-minutes/week and the level of PA in 40% of Iranian adults was low (12). The national survey on NCDs in 2011 showed that the prevalence of low PA in Iranian adults was 44.8% (13). The international study among adults in 28 European countries in 2015 revealed the mean of PA was 2151 MET-minutes/week (16). The median reported sitting time was 300 minutes/day with an IQR of 240 - 480 minutes/day in this study. Another international study in 20 countries showed that the median sitting time was 300 minutes/day with an IQR of 180 - 480

**Table 2.** Prognostic Factors of Physical Activity, According to Ordinal Regression Model

| Variable | $\beta$ | OR | P Value | 95% CI |
|---|---|---|---|---|
| **Constant 1** | -1.34 | 0.26 | 0.009 | -2.34, -0.34 |
| **Constant 2** | 0.75 | 2.10 | 0.137 | -0.24, 1.75 |
| **Age** | -0.02 | 0.98 | 0.008 | -0.03, -0.005 |
| **Gender** [a] | | | | |
| Men | 0.78 | 2.17 | < 0.001 | 0.50, 1.06 |
| **Marital status** [b] | | | | |
| Single | 0.61 | 7.46 | 0.052 | -0.004, 1.22 |
| Married | 0.16 | 1.16 | 0.584 | -0.40, 0.72 |
| **Level of education** [c] | | | | |
| Illiterate | -0.49 | 0.61 | 0.345 | -1.51, 0.53 |
| < High school diploma | -0.46 | 0.63 | 0.027 | -0.87, -0.05 |
| High school diploma | 0.10 | 1.1 | 0.479 | -0.18, 0.39 |
| **Employment status** [d] | | | | |
| Employed | -0.48 | 0.62 | 0.82 | -1.03, 0.06 |
| Retired | -0.16 | 0.85 | 0.681 | -0.93, 0.61 |
| Student | -0.68 | 0.50 | 0.019 | -1.25, -0.11 |
| Housewife | 0.07 | 1.07 | 0.808 | -0.53, 0.68 |
| **Level of income** [e] | | | | |
| Very low | -0.38 | 0.68 | 0.106 | -0.85, 0.08 |
| Low | -0.11 | 0.89 | 0.536 | -0.47, 0.24 |
| Moderate | 0.43 | 1.53 | 0.027 | 0.05, 0.82 |
| **Living in deprived areas** [f] | | | | |
| No | 0.23 | 1.25 | 0.155 | -0.09, 0.56 |

Reference group: [a] women, [b] divorced/widowed, [c] university, [d] unemployed, [e] high, [f] yes

minutes/day, which is very close to our results (17). The level of PA in our study was higher than previous studies in Iran, especially in women, however, it is not adequate, and we need more effective interventions to increase the level of PA among Iranian adults.

This study showed that PA decreases as age increases. Most studies have revealed that inactivity prevalence significantly increases with increase in age (11, 12, 18). It seems that the lack of PA is related to chronic diseases and less social support in older adults.

In the present study, PA was higher in men than in women, which is similar to the results from other developing countries (11, 12, 19-21). Cultural, social, and environmental factors lead to the high prevalence of low PA in Iranian women. These factors include fewer women's participation in PA, especially in the open spaces, women's role as caregivers with limited time for PA, less social support, and lack of sports facilities.

We demonstrated that participants with university education have a higher level of PA compared to those with a pre-college education; this was similar to results of studies in Spain and Oman (22, 23). It seems that academic education improves the knowledge of participants about the benefits of PA.

Students were significantly less active than individuals who were unemployed in the current study. Some studies have shown that students are at risk for insufficient PA in Iran (24, 25). The level of PA was higher in unemployed participants than employers, however, not to a significant extent in this study. Some studies have revealed that employment is a risk factor for inactivity (22).

Our findings revealed that people with moderate income have a higher level of PA compared to those with a high income. This is consistent with findings from a cross-sectional study of Irish older adults, which showed that people with middle SES were less likely to be classified as inactive than people with high SES (18). However, some studies have showed that income is not associated with PA (20).

It seems that people with a lower level of SES have jobs that require more PA compared with those with a higher level of SES.

Although the level of PA was lower in married people than it was in single individuals, there was no significant association between marital status and PA, according to the adjusted regression model in this study. However, some studies have found a significant association between marital status and PA. For example, the results of a study in Oman showed that unmarried men aged 30 - 39 years and unmarried women above the age of 40 were more active than their married counterparts (23). Also, a study in Brazil revealed that physical inactivity was higher in those living with a partner (26).

To the best of our knowledge, no population-based study with a large sample size has been performed on the level of PA and associated factors in southeast Iran. This study was a cross-sectional survey; therefore, we cannot examine causal relationships. Future studies to examine the barrier factors of regular and adequate PA are suggested.

### 5.1. Conclusion

Based on our findings, the level of PA is relatively low in Kerman. In addition, there are disparities in the level of PA across population groups. It seems that PA is influenced by personal, social, cultural, and environmental factors. Therefore, a comprehensive plan is needed to cover the whole community with special attention to more vulnerable subgroups such as those who are older, women, students, and those who have a high income and pre-college education.

It seems that increasing awareness of PA benefits, creating a positive attitude towards PA, providing healthy transportation options including safe walking and cycling, increasing PA facilities including sports spaces especially for women, and enhancing social support for older adults and women are the most important strategies for increasing level of PA in the Iranian society.

## Acknowledgments

The vice-chancellor for research at Kerman University of Medical Sciences funded this research project.

## Footnotes

**Authors' Contribution:** Mohsen Momeni: Study concept and design, analysis and interpretation of data, drafting of the manuscript, critical revision of the manuscript for important intellectual content, statistical analysis, administrative, technical, and material support, study supervision. Mina Danaei: Study concept and design, drafting of the manuscript, critical revision of the manuscript for important intellectual content, statistical analysis, administrative, technical, and material support. Arezoo Saeidifar: Acquisition of data, critical revision of the manuscript for important intellectual content, statistical analysis, administrative, technical, and material support.

**Conflict of Interests:** Authors mention that there is no conflict of interest in this study.

**Ethical Approval:** This study was approved by the Ethical Committee of Kerman University of Medical Sciences. The ethics approval code is IR.KMU.REC.1395.366.

**Funding/Support:** The vice-chancellor for research at Kerman University of Medical Sciences funded this research project.

## References

1. Terzic A, Waldman S. Chronic diseases: The emerging pandemic. *Clin Transl Sci*. 2011;**4**(3):225–6. doi: 10.1111/j.1752-8062.2011.00295.x. [PubMed: 21707955]. [PubMed Central: PMC5439863].
2. Global Burden of Disease Study Collaborators. Global, regional, and national incidence, prevalence, and years lived with disability for 301 acute and chronic diseases and injuries in 188 countries, 1990-2013: A systematic analysis for the Global Burden of Disease Study 2013. *Lancet*. 2015;**386**(9995):743–800. doi: 10.1016/S0140-6736(15)60692-4. [PubMed: 26063472]. [PubMed Central: PMC4561509].
3. Islam SM, Purnat TD, Phuong NT, Mwingira U, Schacht K, Froschl G. Non-communicable diseases (NCDs) in developing countries: A symposium report. *Global Health*. 2014;**10**:81. doi: 10.1186/s12992-014-0081-9. [PubMed: 25498459]. [PubMed Central: PMC4267750].
4. World Health Organization. *Noncommunicable diseases: Progress monitor 2017*. WHO; 2017.
5. Peykari N, Hashemi H, Dinarvand R, Haji-Aghajani M, Malekzadeh R, Sadrolsadat A, et al. National action plan for non-communicable diseases prevention and control in Iran; a response to emerging epidemic. *J Diabetes Metab Disord*. 2017;**16**:3. doi: 10.1186/s40200-017-0288-4. [PubMed: 28127543]. [PubMed Central: PMC5260033].
6. 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. *Lancet*. 2012;**380**(9859):2224–60. doi: 10.1016/S0140-6736(12)61766-8. [PubMed: 23245609]. [PubMed Central: PMC4156511].
7. Forouzanfar MH, Sepanlou SG, Shahraz S, Dicker D, Naghavi P, Pourmalek F, et al. Evaluating causes of death and morbidity in Iran, global burden of diseases, injuries, and risk factors study 2010. *Arch Iran Med*. 2014;**17**(5):304–20. [PubMed: 24784860].
8. World Health Organization. *Global action plan on physical activity 2018–2030: More active people for a healthier world*. WHO; 2018.
9. Colley RC, Garriguet D, Janssen I, Craig CL, Clarke J, Tremblay MS. Physical activity of Canadian adults: Accelerometer results from the 2007 to 2009 Canadian Health Measures Survey. *Health Rep*. 2011;**22**(1):7–14. [PubMed: 21510585].
10. Hallal PC, Bauman AE, Heath GW, Kohl HW 3rd, Lee IM, Pratt M. Physical activity: More of the same is not enough. *Lancet*. 2012;**380**(9838):190–1. doi: 10.1016/S0140-6736(12)61027-7. [PubMed: 22818932].
11. Hallal PC, Andersen LB, Bull FC, Guthold R, Haskell W, Ekelund U, et al. Global physical activity levels: Surveillance progress, pit-

falls, and prospects. *Lancet*. 2012;**380**(9838):247–57. doi: 10.1016/S0140-6736(12)60646-1. [PubMed: 22818937].
12. Esteghamati A, Khalilzadeh O, Rashidi A, Kamgar M, Meysamie A, Abbasi M. Physical activity in Iran: Results of the third national surveillance of risk factors of non-communicable diseases (SuRFNCD-2007). *J Phys Act Health*. 2011;**8**(1):27–35. [PubMed: 21297182].
13. Sahebkar M, Heidarian Miri H, Noormohammadpour P, Akrami R, Mansournia N, Tavana B, et al. Prevalence and correlates of low physical activity in the Iranian population: National survey on noncommunicable diseases in 2011. *Scand J Med Sci Sports*. 2018;**28**(8):1916–24. doi: 10.1111/sms.13082. [PubMed: 29528518].
14. Moghadam M, Hajikazemi ES, RoozberM F, Hosseini AF. Relationship between physical activity and triceps skin fold thickness in adolescent girl students. *Iran J Nurs*. 2011;**24**(69):62–8.
15. Ashok P, Kharche J, Raju R, Godbole G. Metabolic equivalent task assessment for physical activity in medical students. *Nat J Physiol Pharm Pharmacol*. 2017;**7**(2):1. doi: 10.5455/njppp.2017.7.0825604092016.
16. Gerovasili V, Agaku IT, Vardavas CI, Filippidis FT. Levels of physical activity among adults 18-64 years old in 28 European countries. *Prev Med*. 2015;**81**:87–91. doi: 10.1016/j.ypmed.2015.08.005. [PubMed: 26299619].
17. Bauman A, Ainsworth BE, Sallis JF, Hagstromer M, Craig CL, Bull FC, et al. The descriptive epidemiology of sitting. A 20-country comparison using the International Physical Activity Questionnaire (IPAQ). *Am J Prev Med*. 2011;**41**(2):228–35. doi: 10.1016/j.amepre.2011.05.003. [PubMed: 21767731].
18. Murtagh EM, Murphy MH, Murphy NM, Woods C, Nevill AM, Lane A. Prevalence and correlates of physical inactivity in community-dwelling older adults in Ireland. *PLoS One*. 2015;**10**(2). e0118293. doi: 10.1371/journal.pone.0118293. [PubMed: 25671621]. [PubMed Central: PMC4324635].
19. Dumith SC, Hallal PC, Reis RS, Kohl HW 3rd. Worldwide prevalence of physical inactivity and its association with human development index in 76 countries. *Prev Med*. 2011;**53**(1-2):24–8. doi: 10.1016/j.ypmed.2011.02.017. [PubMed: 21371494].
20. Talaei M, Rabiei K, Talaei Z, Amiri N, Zolfaghari B, Kabiri P, et al. Physical activity, sex, and socioeconomic status: A population based study. *ARYA Atheroscler*. 2013;**9**(1):51–60. [PubMed: 23696760]. [PubMed Central: PMC3653259].
21. Mabry RM, Reeves MM, Eakin EG, Owen N. Evidence of physical activity participation among men and women in the countries of the Gulf cooperation council: A review. *Obes Rev*. 2010;**11**(6):457–64. doi: 10.1111/j.1467-789X.2009.00655.x. [PubMed: 19793376].
22. Serrano-Sanchez JA, Lera-Navarro A, Dorado-Garcia C, Gonzalez-Henriquez JJ, Sanchis-Moysi J. Contribution of individual and environmental factors to physical activity level among Spanish adults. *PLoS One*. 2012;**7**(6). e38693. doi: 10.1371/journal.pone.0038693. [PubMed: 22685598]. [PubMed Central: PMC3369927].
23. Mabry RM, Morsi M, Al-Lawati JA, Owen N. Descriptive epidemiology of physical activity among Omani adults: the Oman World Health Survey, 2008. *East Mediterr Health J*. 2016;**22**(2):103–15. [PubMed: 27180738].
24. Danaei M, Momeni M, Sheikhshoaei M, Khalooei A. Physical activity and its determinant factors among medical university students of Kerman University of Medical Sciences. *Soc Determin Health*. 2018;**4**(1):17652.
25. Mehri A, Solhi M, Garmaroudi G, Nadrian H, Sighaldeh SS. Health promoting lifestyle and its determinants among university students in Sabzevar, Iran. *Int J Prev Med*. 2016;**7**:65. doi: 10.4103/2008-7802.180411. [PubMed: 27141284]. [PubMed Central: PMC4837801].
26. Del Duca GF, Nahas MV, Garcia LM, Mota J, Hallal PC, Peres MA. Prevalence and sociodemographic correlates of all domains of physical activity in Brazilian adults. *Prev Med*. 2013;**56**(2):99–102. doi: 10.1016/j.ypmed.2012.11.007. [PubMed: 23200875].