Level of Physical Activity of Physicians Among Residency Training Program At Prince Sultan Military Medical City, Riyadh, KSA 2014

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Abstract

Introduction: Physical exercise is a crucial component in maintaining a healthy life. Unfortunately, the prevalence of adequate physical activity among young physicians is low. Additionally, there was a few research estimating lifestyle habits and other preventive health measurements especially during their residency-training program despite the importance of this topic.

Objectives: The aim of this research is to determine the level of physical activity and the main barriers of being physically active among physicians at Prince Sultan Military Medical City (PSMMC).

Methods: An analytical cross-sectional study was adopted targeting the physicians of residency training program in different specialties at PSMMC, Riyadh, KSA.
Data was collected using of short form of the International Physical Activity Questionnaire (IPAQ).

Results: The study showed that 68.4% of the participants had low level of physical activity (≤600-MET min/week). High physical activity level was more reported among male physicians compared to female physicians (4.3% versus 1.3%). The most frequent barriers of practicing physical activities among males were limited exercise facilities at home (71.7%), not suitable weather (69%) and the first priority is not for exercise (67.2%) whereas among females were no enough time to exercise (69.3%), lack of suitable places to exercise nearby (68%), the first priority is not for exercise (66.7%)

Conclusion: Most of the physicians especially female residents reported low level of physical exercise due to many barriers. Overcoming these barriers may contribute to a further increase in the level of physical activity among them.

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Introduction

Physical activity is defined as "any bodily movement that produced by contractions of skeletal muscles that result in energy expenditure above the basal level". [1] It is a crucial component in maintaining a healthy life. [2] Lack of regular physical activity attributes to several diseases that occur in adults for example, heart diseases, stroke, diabetes mellitus, depression, obesity, etc. [3] In addition, poor dietary habits have also contributed to increase prevalence of obesity and its complications in adults. [4] Therefore, The American Heart Association (AHA) recommends "at least 150 minutes per week of moderate intensity aerobic activity or 75 minutes of vigorous activity for optimal health". [3]

Physical inactivity rate is dramatically increasing worldwide. [5] The international prevalence of physical inactivity was estimated as 21.4%. [6] At least 23% of population in United States considered physically inactive and only 39% of people in England reported meeting recommended levels of physical activity. [7] Locally, a large cross sectional study found that there is a high level of physical inactivity in both Saudi males and females (43.3%- 99%). [8] A study from Al-Hassa region estimated that only 10.4% of Saudi population were in the high active category with beneficial health. [9] Another local study showed that 19% of adult males in Riyadh city were active on regular basis. [10] Moreover, the prevalence of Saudi people who walked at least 150 min per week was under 33%, and males involved more in vigorous activity compared with females. [11]

Many chronic diseases such as Diabetes (DM), hypertension, dyslipidemia and coronary artery disease have a huge burden on the health system and its resources in Saudi Arabia. [12] These diseases are strongly related to the individual dietary habits and his/her physical activity level. [13] However, there are significant changes in our community at the level of physical activity, life style and eating habits that have been reported and need to be addressed. [14, 15]

The current literature shows that young physicians have low level of physical activity. An American study was conducted to determining levels of physical activity among physicians from different job levels in the USA; It found that fellow and resident physicians engage in less physical activity than consultant physicians. [16] Furthermore, a local study has been conducted to measure the level of physical activity among primary care physicians in Riyadh city, found that only 23.5% were considered physically active. [17] Recently, Rao et al [4] have conducted a cross sectional study among 240 undergraduate medical students. They found that more than 50% of the students were utilizing the sports facilities provided by the university in the campus.

Most of the time, young physicians frequently ignor their own personal health and wellbeing despite of their awareness about the importance of physical activity. [18, 19]

Physical activity counseling and health education through primary health care (PHC) can play a significant role in improving the physicians lifestyle behavior and can encourage them to be physically active.

Research Objectives

1. To estimate the prevalence of physical exercise level among resident physicians during their residency training program at Prince Sultan Military Medical City.

2. To investigate the differences in physical exercise behavior between female and male resident physicians.

3. To determine the main barriers of being physically active among them.

Material and Methods

The study was targeting the physicians of residency training program of different specialties at Prince Sultan Military Medical city in Riyadh. It is an analytical cross-sectional study. All physicians in the residency-training program without physical disability were considered eligible for this study. Being pregnant and/or in vacation one week prior to the study (because IPAQ measuring the physical activity during the last seven days) are the exclutions criteria.

The total number of resident physicians according to postgraduate medical studies department at PSMMC is 315 residents, 106 (33.6%) of them were females and 209 (66.4%) were males. The total number of

female residents in both surgical and non-surgical specialties were 39 (36.8%) and 67 (63.2%) respectively. On the other hand, the total number of male residents in both surgical and non-surgical specialties were 78 (37.3%) and 131 (62.7%) respectively, the female to male ratio was 1: 2.

All resident physicians who work at PSMMC, Riyadh, KSA at the period of the study constituted the target population (n=315). Thirty seven resident physicians were out of the work and five were excluded according to our exclusion criteria. Thus, the total number of resident physicians invited to participate in the study was 273.There were 190 residents responded by returning a completed questionnaire. Thus, a response rate of 69.6% had been achieved.

Data were collected by using the short form of the IPAQ that provide common instrument to estimate the level of physical activity. [(20)] Additionally, Questions regarding barriers of physical activity were independently added to the questionnaire. The barriers questions were estimated from the literature review and by using a Focus group method consisting of seven residents for gathering more suggested barriers.

IPAQ includes questions about physical activity (PA) of three intensities (vigorous, moderate, and walking).The physicians had to estimate the frequency (days/week) and the average time that he/she being physically active on these days. The study calculated the total PA and the Metabolic Equivalent (MET min/week), as suggested in the guidelines of the IPAQ for data management for the sum of walking, moderate, and vigorous PA [(21)].

The following categories were identified for defining PA levels into three groups: low activity level (≤600 METs-min/week), moderately active (601 to 3000 METs-min/week) and highly active (≥3001). [(21)]

The reliability and validity of the questionnaire were tested across 12 countries (14 sites) in 2000. [(22)] Two weeks prior to distribution of the questionnaires a participant's information sheets (PIS) and invitation letter were distributed targeting our sample including the eligibility to enter the study. The questionnaires were distributed to the representative sample during their doctors meeting or half-day release course (HDRC) activity.

Main study variables

1. Independent variables: gender, BMI level, smoking and residency training level.
2. Dependent variable: level of physical activity.

Data were analyzed according to data processing rules and analysis of the IPAQ.
A Chi square test was used, generated by SPSS software ,version 20. The level of significance was set at P value <0.05.

Ethical Considerations

- Approval of the research ethics committee at PSMMC was obtained before conducting the research.
  Project number 603, date of approval 02 september, series of 2014.

- Invitation letters, PIS and written consent were taken for data collection. Data were kept confidentially and used only for the purpose of this research.

Results

The study included 190 resident physicians out of 273 invited to participate giving a response rate of 69.6%.

Personal Characteristics

More than one third of them (35.8%) were family medicine residents whereas residents in general surgery, obstetrics & Gynecology and internal medicine represent 10.5%, 10% and 7.9% of them, respectively. Almost An equal number of residents were recruited from all the levels of residency (22-29%) except the fifth residency training level, because only 3.2% were recruited from it (Table 1).

Table 1: Personal characteristics of resident physicians, Prince Sultan Military Medical City (PSMMC), Riyadh, Saudi Arabia

	Frequency	Percentage
Age in years		
<30	135	71.7
≥30	55	28.9
Range	24-37	
Mean±SD	28.5±2.1	
Gender		
Males	115	60.5
Females	75	39.5
Nationality		
Saudi	182	95.8
Non-Saudi	8	4.2
Marital status		
Single	73	38.5
Married	112	58.9
Divorced	5	2.6
Specialty		
Surgical	**58**	**30.5**
General surgery	20	10.5
Obstetrics and Gynecology	19	10.0
Orthopedics	5	2.6
Ear, Nose, Throat	10	5.3
Neurosurgery	4	2.1
Medical	**132**	**69.5**
Internal Medicine	15	7.9
Family medicine	68	35.8
Pediatrics	15	7.9
Neurology	5	2.6
Dermatology	4	2.1
Psychiatry	8	4.2
Anesthesia	5	2.6
Radiology	8	4.2
Residency Training level		
1st	43	22.6
2nd	55	29.0
3rd	43	22.6
4th	43	22.6
5th	6	3.2

Physical Activity

As demonstrated in figure 1, almost two-thirds of resident physicians (68.4%) reported low level of PA (≤600 MET min/week) whereas 28.4% of them reported moderate level of PA (601-3000 MET min/week). High level of PA (≥3001 MET min/week) was reported among only six physicians representing 3.2% .

Vigorous physical activities (heavy lifting, digging, aerobics) were practiced by about a quarter of resident physicians (23.7%) whereas moderate physical activities (carrying light loads, bicycling at a regular pace) were practiced by 31.1% of them. Walking was practiced by most of them (75.3%).

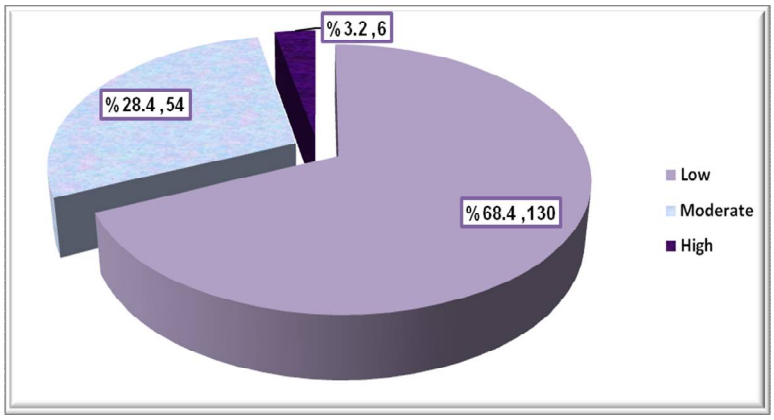

Figure 1: Level of PA (MET min/week) among resident physicians, (PSMMC), Riyadh, Saudi Arabia, 2014

Factors Associated With Physical Activity

Gender

High physical activity level was more reported among male physicians compared to female physicians (4.3% versus 1.3%). The difference was statistically significant, p=0.019 (Table 2).

Table 2: Association between gender and PA among resident physicians, (PSMMC), Riyadh, Saudi Arabia, 2014

Gender	Level of physical activity			χ^2- value (p-value)
	Low N=130 N (%)	Moderate N=54 N (%)	High N=6 N (%)	
Males (n=115)	70 (60.9)	40 (34.8)	5 (4.3)	7.88 (0.019)
Females (n=75)	60 (80.0)	14 (18.7)	1 (1.3)	

Residency Training Level

As shown in table 3, the high level of physical activity was more reported by residents of the first training level (9.3%) whereas low level of physical activity was more reported by residents of the fourth level (76.7%). However, these differences were not statistically significant, P value = 0.356.

Table 3: Association between residency training level and PA among resident physicians, (PSMMC), Riyadh, Saudi Arabia, 2014

Residency level	Level of physical activity			χ^2- value (p-value)
	Low N=130 N (%)	Moderate N=54 N (%)	High N=6 N (%)	
First (n=43)	26 (60.5)	13 (30.2)	4 (9.3)	8.84 (0.356)
Second (n=55)	39 (70.9)	15 (27.3)	1 (1.8)	
Third (n=43)	28 (65.1)	14 (36.6)	1 (2.3)	
Fourth (n=43)	33 (76.7)	10 (23.3)	0 (0.0)	
Fifth (n=6)	4 (66.7)	2 (33.3)	0 (0.0)	

Smoking Status

Smoking history of resident physicians was not significantly associated with their PA level, P value =0.603.

Body Mass Index (BMI)

As demonstrated from table 4, BMI of resident physicians was not statistically significant associated with their physical activity level, P value =0.930.

Table 4: Association between BMI and PA among resident physicians, (PSMMC), Riyadh, Saudi Arabia, 2014

BMI	Level of physical activity			χ^2- value (p-value)
	Low N=130 N (%)	Moderate N=54 N (%)	High N=6 N (%)	
Underweight (n=7)	5 (71.4)	2 (28.6)	0 (0.0)	1.89 (0.930)
Normal (n=81)	54 (66.7)	25 (30.9)	2 (2.5)	
Overweight (n=72)	48 (66.7)	21 (29.2)	3 (4.2)	
Obese (n=30)	23 (76.7)	6 (20.0)	1 (3.3)	

Barriers of Practicing Physical Activities

Among Male Resident Physicians

More than half of the male participants were either extremely agreed or agreed that the most of the barriers were related to the following reasons (Table 5):

- Unavailability of exercise facilities at home
- The unsuitable weather
- Their first priority is not to exercise
- No enough time to exercise

Among Female Resident Physicians

Most of the female residents were either extremely agreed or agreed that the barriers of practicing physical activities were mainly the following (Table 5):

- Not having enough time to exercise
- Lack of suitable places to exercise nearby
- Their first priority is not for exercise
- A lot of responsibilities

Table 5. Percentages comparison of most common barriers of PA between male and female resident physicians, PSMMC, Riyadh, Saudi Arabia, 2014

Barriers of PA	Male participants that agree or extremely agree (%)	Female participants that agree or extremely agree (%)
Unavailability of exercise facilities at home	71.7	56
The unsuitable weather	69	64
Their first priority is not to exercise	67.2	66.7
No enough time to exercise	62.8	69.3
Lack of suitable places to exercise nearby	59.3	68
A lot of responsibilities	45.9	66.6

Discussion

The process of medical study and residency training seems to have a negative impact on resident physicians' lifestyle such as deterioration in PA level. [23] There is compelling evidence that doctor's own PA practices influence their clinical attitudes towards PA. [24]

The majority of resident physicians at PSMMC were not physically active. The present study revealed that almost two thirds of our resident physicians were of low level regarding PA.

Our study showed that few residents in their residency training program practicing high physical exercise on regular basis. This value can be explained by high working hours, busy work schedule during residency and examinations.

The alarming problem of a decline in physical activity and its detrimental effects on public health has been well recognized worldwide. [25] In a study conducted by Al-Hazza in Riyadh, [11] using the short-version telephone format of IPAQ, few Saudi adults living in Riyadh were sufficiently vigorously active. However, nearly half of the population was sufficiently moderately active. A Brazilian survey using the IPAQ short-form instrument found inactivity prevalence of 41.1% among Brazilian adults aged 20 years and above. [36] In comparison with our study, that used IPAQ-short form only 28% of physicians were moderately active. The physician's level of physical activity in the present study was not related to, residency training level, BMI, smoking . The same has been reported in a study conducted among family medicine doctors in Estonia. [26]

We have expected that overweight and obese resident physicians to be less physically active than those of normal or underweight. But in the present study, underweight resident physicians were found to be less active than their obese or overweight peers as high level of physical activity was reported by none of them compared to approximately 3% and 4% of them, respectively. The same has been reported by Khalaf et al in a study conducted among University students in Southwestern Saudi Arabia. [27]

In the current study, the most prominent finding was that physical activity was significantly higher among male than female resident physicians and in addition, 80% of females had low activity level. The hot climate, high dependency on automobiles, the employment housekeepers, and conservatives social norms seem to contribute to low levels of activity in daily life. [28] Data from the WHO 2009 also showed that physical inactivity is globally more prevalent among girls. [29]

The study showed that more than half of participants of both genders agreed that barriers for physical activity are lack of time to exercise, limited suitable places to exercise , not suitable weather, limited exercise facilities at home, and a lot of family and social relationship. Likewise a study by Rao et al. revealed lack of time and lack of motivation were the most significant barrier for practicing regular physical activity by over 50% of the medical professionals. [4]

Another limitation of the present study is the possible risk of overestimation or underestimation where physical activity is self-reported. Hence it is evident that validated self-reported questionnaires like the IPAQ are suitable for everyday practice. [22] The cross-sectional design of the survey makes it difficult to sort out the causal relationships among variables studied. Finally, subjects included in the study represented resident physicians in PSMMC in Riyadh, thus the findings cannot be generalized beyond those in other areas in KSA.

Conclusion

The prevalence of physical activity among residents is low mainly due to unavailability of places or limited time and almost two-thirds of resident physicians in PSMMC; Riyadh had low level of physical activity. Males had significant higher level of physical activity than females. There are many barriers to physical activity including unsuitable weather,the first priority is not for exercise and a lot of responsibilities .

Encouraging young physicians to practice physical exercise will help them as models to encourage their patients and consequently play an important role in promoting PA and fitness among all people. Furthermore, attempts to reduce barriers to physical activity should be encouraged particularly among females. Providing suitable places to practice physical exercise inside the health care facilities. Finally, the study should be replicated

with additional samples of young physicians in other regions.

References:

1. Physical Activity Guidelines Advisory Committee report, 2008. To the Secretary of Health and Human Services. Part A: executive summary. Nutrition reviews. 2009 Feb;67(2):114-20. PubMed PMID: 19178654. Epub 2009/01/31. eng.
2. Elsawy B, Higgins KE. Physical activity guidelines for older adults. American family physician. 2010;81(1):55-9.
3. Haskell WL, Lee I-M, Pate RR, Powell KE, Blair SN, Franklin BA, 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):1081.
4. Rao CR, Darshan B, Das N, Rajan V, Bhogun M, Gupta A. Practice of physical activity among future doctors: A cross sectional analysis. International journal of preventive medicine. 2012;3(5):365.
5. Yancey AK, Sallis RE, Bastani R. Changing physical activity participation for the medical profession. JAMA. 2013;309(2):141-2.
6. Dumith SC, Hallal PC, Reis RS, Kohl HW. Worldwide prevalence of physical inactivity and its association with human development index in 76 countries. Preventive Medicine. 2011;53(1):24-8.
7. Anokye NK, Pokhrel S, Buxton M, Fox-Rushby J. Physical activity in England: who is meeting the recommended level of participation through sports and exercise? The European Journal of Public Health. 2013;23(3):458-64.
8. Al-Nozha MM, Al-Hazzaa HM, Arafah MR, Al-Khadra A, Al-Mazrou YY, Al-Maatouq MA, et al. Prevalence of physical activity and inactivity among Saudis aged 30-70 years: a population-based cross-sectional study. Saudi medical journal. 2007;28(4):559-68.
9. Amin TT, Al Khoudair A, Al Harbi M, Al Ali A. Leisure time physical activity in Saudi Arabia: prevalence, pattern and determining factors. Asian Pac J Cancer Prev. 2012;13(1):351-60.
10. Al-Rafaee S, Al-Hazzaa HM. Physical activity profile of adult males in Riyadh City. Saudi medical journal. 2001;22(9):784-9.
11. Al-Hazzaa HM. Health-enhancing physical activity among Saudi adults using the International Physical Activity Questionnaire (IPAQ). Public health nutrition. 2007;10(01):59-64.
12. Al-Shehri F, Moqbel M, Al-Shahrani A, Al-Khaldi Y, Abu-Melha W. Management of obesity: Saudi Clinical Guideline. Saudi Journal of Obesity. 2013;1(1):18.
13. 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.
14. Midhet F, Al Mohaimeed AR, Sharaf F. Dietary practices, physical activity and health education in qassim region of Saudi Arabia. International journal of health sciences. 2010;4(1):3.
15. Al-Nozha MM, Al-Maatouq MA, Al-Mazrou YY, Al-Harthi SS, Arafah MR, Khalil MZ, et al. Diabetes mellitus in Saudi Arabia. Saudi Med J. 2004 Nov;25(11):1603-10. PubMed PMID: 15573186. Epub 2004/12/02. eng.
16. Stanford FC, Durkin MW, Blair SN, Powell CK, Poston MB, Stallworth JR. Determining levels of physical activity in attending physicians, resident and fellow physicians and medical students in the USA. British journal of sports medicine. 2011:bjsports-2011-090299.
17. Al-Shahri MZ, Al-Almaei SM. Promotion of physical exercise by primary health care physicians in Riyadh city. Saudi medical journal. 1998;19(1):67-9.
18. Uncu Y, Bayram N, Bilgel N. Job related affective well-being among primary health care physicians. The European Journal of Public Health. 2007;17(5):514-9.
19. McGrady FP, McGlade KJ, Cupples ME, Tully MA, Hart N, Steele K. Questionnaire survey of PHysical activITy in General Practitioners (PHIT GP Study). The Ulster medical journal. 2007 May;76(2):91-7. PubMed PMID: 17476823. Pubmed Central PMCID: PMC2001141. Epub 2007/05/05. eng.
20. Booth M. Assessment of physical activity: an international perspective. Research

quarterly for exercise and sport. 2000 Jun;71 Suppl 2:114-20. PubMed PMID: 25680021. Epub 2000/06/01. eng.
21. Committee IR. Guidelines for data processing and analysis of the International Physical Activity Questionnaire (IPAQ). Consultado em. 2005;20.
22. Booth ML, Ainsworth BE, Pratt M, Ekelund U, Yngve A, Sallis JF, et al. International physical activity questionnaire: 12-country reliability and validity. Med sci sports Exerc. 2003;195(9131/03):3508-1381.
23. Nuss MA, Reger-Nash B, Williams K, Yasek V, Juckett G, Richards T. Medical student perceptions of healthy lifestyles: a qualitative study. Californian J Health Promot. 2004;2(1):127-34.
24. Lobelo F, Duperly J, Frank E. Physical activity habits of doctors and medical students influence their counselling practices. British journal of sports medicine. 2009;43(2):89-92.
25. Bergier J, Kapka-Skrzypczak L, Bilinski P, Paprzycki P, Wojtyla A. Physical activity of Polish adolescents and young adults according to IPAQ: a population based study. Annals of Agricultural and Environmental Medicine. 2012;19(1).
26. Suija K, Pechter Ü, Maaroos J, Kalda R, Rätsep A, Oona M, et al. Physical activity of Estonian family doctors and their counselling for a healthy lifestyle: a cross-sectional study. BMC family practice. 2010;11(1):48.
27. Khalaf A, Ekblom Ö, Kowalski J, Berggren V, Westergren A, Al-Hazzaa H. Female university Students' physical activity levels and associated factors—a cross-sectional study in southwestern Saudi Arabia. International journal of environmental research and public health. 2013;10(8):3502-17.
28. Mabry R, Reeves M, Eakin E, Owen N. Evidence of physical activity participation among men and women in the countries of the Gulf Cooperation Council: a review. Obesity Reviews. 2010;11(6):457-64.
29. Organization WH. Interventions on diet and physical activity: what works: summary report. 2009.