Research Article

Are family medicine residents physically active? And do they counsel their chronically ill patients about physical activity? A cross-sectional study among residents of the family medicine joint program, eastern province, Saudi Arabia

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Abstract

Background: Physical activity is a major factor in both preventing chronic illness and in controlling it in already diseased patients. It has been established that a physically active physician may be more likely to counsel patients about the benefits of physical activity and patients tend to adhere to exercise regimens when advised by a physician they think of as a role model.

Objective: To determine the amount of physical activity the family medicine's residents adhere to and to determine if family medicine residents practice what they counsel to their patients regarding physical activity.

Materials and Methods: All family medicine residents in all of the training levels were recruited to take part in the International Physical Activity Questionnaire (IPAQ) survey voluntarily. Levels of physical activity were divided into three categories: low, moderate, and high, according to the guidelines of data processing of the IPAQ. Section two of the survey assessed whether residents in fact counseled patients with chronic prevalent diseases (coronary artery disease, diabetes mellitus, obesity, etc.) about physical activity and the ranking of the most important health determinants according to them.

Result: The sample size consisted of 80 participants, all residents of the program from R1 to R4. We have found that the majority >70% of them had low level of physical activity. The majority (96%) did counsel their patients about physical activity especially when the patient had diabetes.

Conclusion: Although residents of the joint family medicine program of the eastern province of the Kingdom of Saudi Arabia were not, self-reportedly, physically active themselves, they were active in patient counseling regarding the importance of physical activity in achieving global health and well-being.

KEY WORDS: Physical activity, family medicine, residents, counseling

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Introduction

Physical activity defined by Caspersen et al.[1] in their 1985 public health paper is any bodily movement produced by skeletal muscles, which result in energy expenditure and which can be categorized into occupational, sports, conditioning, household, or other active daily life activities.

It is very well-known to the medical community, as published in many research papers, that physical activity is a cornerstone factor in the management of many chronic and prevailing health problems nowadays such as coronary artery disease (CAD), obesity, and other emotional disorders.[2–4] These diseases that are related to physical inactivity have become a major burden financially and are the leading cause of mortality and morbidity in Saudi Arabia.[5] The World Health Organization (WHO) estimates that physical inactivity prevalence among Saudi adults is approaching an astonishing 80%.[6]

Physical activity among physicians themselves, although researched many times in many regions of the world, has yielded controversial results. Many studies, with minimal exceptions[7–10] have concluded that physicians are generally active and more so than the rest of the community. Reports about physical activity of primary health care physicians in Saudi Arabia also showed matching results.[11]

Counseling patients, promoting health and well-being, and early prevention of disease are considered one of the most important aspects of a family physician's daily work.[12] In fact, health promotion is one of the core competencies a family physician must possess and master.[13] Worldwide reports show that physician's personal physical activity has a positive influence on his/her health promotion of physical activity to patients and on counseling patterns of physical activity to their chronically ill patients as well.[14,15]

Very few papers have been published regarding the physical activity of Saudi family physicians in different regions of the Kingdom and its effect on their counseling patterns to their patients with chronic medical diseases. As per our humble knowledge, none have been conducted in the eastern region of Saudi Arabia and among the residents of the joint program for family medicine.

Objective

- Determine the amount of physical activity the family medicine's residents adhere to.
- Determine if family medicine residents practice what they counsel to their patients regarding physical activity.

Materials and Methods

All family medicine program trainees were voluntarily surveyed in this cross-sectional study. The total number of 80 female and male residents, from R1 to R4 (R1: first-year resident; R2: second-year resident; R3: third-year resident, R4: fourth-year resident), were enrolled in the study. The survey questionnaire consists of three sections:

1. Section I of the questionnaire consists of the short form of IPAQ (International Physical Activity Questionnaire), which was used because of its high reliability and validity.[16]
2. Section II of the questionnaire consists of three main questions regarding counseling for physical activity in practice, including whether patients with the chronic diseases (coronary heart disease, hypertension, type 2 diabetes, depression, and obesity) seek your advice on physical activity, whether you counsel patients with the chronic diseases about physical activity, and contribution of importance ranking of factors (nonsmoking, nonconsumption of alcohol, healthy nutrition, and physical activity) to health in the process of counseling of patients with chronic diseases. The ranking ranges from 1 to 4, with 1 = most important and 4 = least important. Further on, HTN and CAD were conjoined to form one entity in the analysis called heart disease. These new questions were added as per the previously published data on physical activity's effectiveness in the management of chronic diseases and the counseling patterns of physicians, which help to gain better control of chronic diseases outcomes.[4,17–20]
3. Section III of the survey consists of the demographic characteristics of the participants including age, weight, height, gender, and training level of family medicine residents.

The "Guidelines for data processing and analysis of the IPAQ" was used as the guide for data processing of Section I data.[21] The IPAQ had questions on three interties of physical activity (vigorous, moderate, and walking). There were three levels of physical activity determined after data gathering, that is, low, moderate, and high. Each participant had to estimate the frequency and duration of their physical activity, and the metabolic equivalent was computed for each level of physical activity according to the guideline. Binary logistic regression was used to investigate if there was a relationship between the level of physical activity, whether patients with the chronic disease seek the family medicine residents' advice on physical activity, whether the family medicine residents counsel patients with the chronic diseases about physical activity, and the demographics of family medicine residents, including age, body mass index (BMI) (calculated from weight and height), gender, and training level. Wald χ^2 test was used to determine if an effect was statistically significant. *p*-Value less than 0.05 indicated significance. The odds ratio estimates and the corresponding 95% confidence limits were presented if relevant. All data analyses were conducted using SPSS version 14.

Result

Among the 80 participants, 10 participants had missing data for the time or days of their physical activity. Thus, the level of physical activity could not be determined for these 10 subjects. The one-way frequency interpretation of levels of physical activity for the remaining 70 participants was as follows: 52 (74%) had low level of physical activity, 5 (7%) had moderate level of physical activity, and 13 (19%) had high level of physical activity [Figure 1]. Please note that moderate and high levels of physical activity were combined later in the analysis because there were only five participants with moderate level of physical activity.

The demographic data of the sample was as follows: 49 (63%) participants were women and 29 (37%) were men.

Two participants did not disclose their gender identity. Among the 80 participants, 21 (26%) were R1, 22 (28%) were R2, 17 (21%) were R3, and 25 (20%) were R4. The average age of the participants was 28 years. The average BMI for the participants was 26.57 [Table 1].

The participants' responses for "Whether patients with the chronic diseases (coronary heart disease, hypertension, type 2 diabetes, depression, and obesity) seek your advice on physical activity?" appeared to be that patients with type 2 diabetes most often sought advice on physical activity (90%) and patients with depression least often sought advice on physical activity (36%). Their response to the question "Whether you counsel patients with the chronic diseases (coronary heart disease, hypertension, type 2 diabetes, depression, and obesity) about physical activity?" was that they most often counseled patients with type 2 diabetes and obesity about physical activity (96%), and they least often counseled patients with depression about physical activity (64%) [Table 2].

The importance ranking of factors (nonsmoking, nonconsumption of alcohol, healthy nutrition, and physical activity) contribution to health in the process of counseling of patients with chronic diseases was analyzed and it showed that family medicine residents have viewed nonsmoking as the most important factor contribution to health in the process of counseling of patients with chronic diseases (average ranking = 1.91), followed by physical activity (average ranking = 2.28), and healthy nutrition (average ranking = 2.54). The least important factor was nonconsumption of alcohol (average ranking = 3.15) [Figure 2].

Binary logistic regression was used to determine if there was a relationship between the level of physical activity and the demographics. After excluding participants with missing values in the demographics, the total number of participants included in the analysis was 64. Table 3 shows the two-way frequency table of level of physical activity, and gender, and training level. The results of the Wald χ^2 test suggested that there was no statistically significant relationship between the level of physical activity and age, BMI, gender, and level of

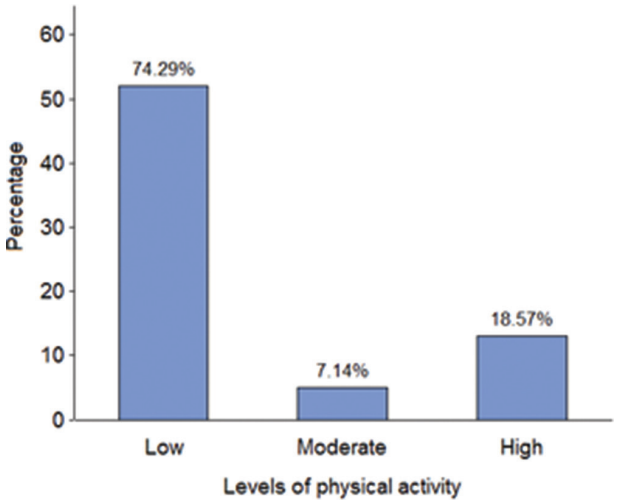

Figure 1: Bar chart of percentage of levels of physical activity

Table 1: Demographics of family medicine residents (gender, training level, age, weight, height, and BMI)

Characteristics		Frequency	Percent
Gender	Female	49	63
	Male	29	37
Level	R1	21	26
	R2	22	28
	R3	17	21
	R4	20	25
Age (years)	*N*	80	Min. 20
	Mean	28.06	Max. 36
	SD	2.57	
Weight (kg)	*N*	77	Min. 28
	Mean	71.73	Max. 195
	SD	21.83	
Height (cm)	*N*	79	Min. 145
	Mean	163.62	Max. 186
	SD	7.78	
BMI	*N*	76	Min. 10.28
	Mean	26.57	Max. 67.47
	SD	7.20	

BMI, body mass index; Min, minimum; Max, maximum; R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident; SD, standard deviation.

N = sample size.

Table 2: Responses for "Whether patients with the chronic diseases seek your advice on physical activity?" and "Whether you counsel patients with the chronic diseases about physical activity?"

Questions	Answer	CAD	HTN	DM type 2	Depression	Obesity
Do patients seek your advice	Yes	43 (54)	61 (76)	71 (90)	27 (36)	61 (82)
	No	37 (46)	19 (24)	8 (10)	49 (64)	13 (18)
	Total	80	80	79	76	74
Do you counsel patients	Yes	53 (66)	73 (92)	77 (96)	49 (64)	77 (96)
	No	27 (34)	6 (8)	3 (4)	28 (36)	3 (4)
	Total	80	79	80	77	80

CAD, coronary artery disease; DM, diabetes mellitus; HTN.

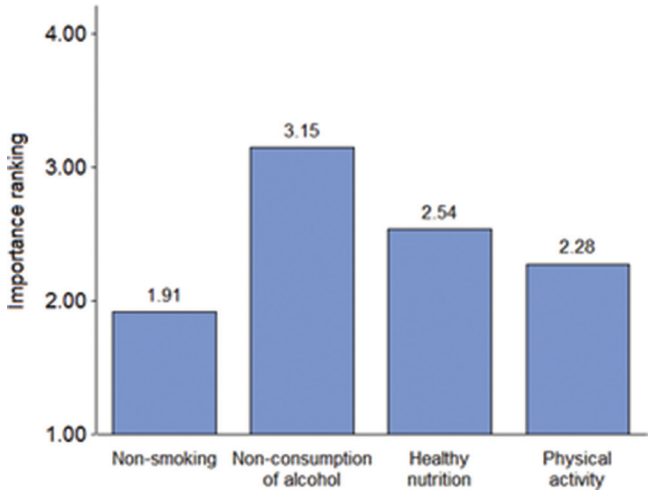

Figure 2: Average ranking for factors (Nonsmoking, Nonconsumption of alcohol, healthy nutrition, and physical activity) contribution to health in the process of counseling of patients with chronic diseases. 1 = most important and 4 = least important

training of family medicine residents. The Hosmer–Lemeshow goodness-of-fit tests suggest that the fitted model was adequate ($p = 0.4087$).

Analysis of Patients with Chronic Diseases Seeking Advice from Family Medicine Residents

The results of the Wald χ^2 test suggested that there was no statistically significant relationship between the patients with coronary heart disease, type 2 diabetes, obesity, and depression seeking advice on physical activity and the level of physical activity, the age, BMI, gender, and the training level of the family medicine residents. The Hosmer–Lemeshow goodness-of-fit tests suggest that the fitted model was adequate for each disease with $p = 0.5139$, $p = 0.5076$, $p = 0.4628$, $p = 0.6646$, respectively [Tables 4, 5, 7–9].

The only statistically significant relationship established by the Wald χ^2 test was between the patients with hypertension seeking advice on physical activity and the level of physical activity for family medicine residents at the 0.05 level (χ^2 (1) = 3.9603, $p = 0.0466$). Another statistically significant relationship between the patients with hypertension seeking advice on physical activity and the training level of family medicine residents was also found at the 0.05 level (χ^2 (3) = 7.8681, $p = 0.0488$). The Hosmer–Lemeshow goodness-of-fit tests suggest that the fitted model was adequate ($p = 0.3834$). The odds ratio estimates are presented in Table 6.

Table 3: Level of physical activity and gender and training level of family medicine residents

Characteristics		Level of physical activity		Total (%)
		Low (%)	Moderate/high (%)	
Gender	Female	33 (77)	10 (23)	43 (100)
	Male	15 (71)	6 (29)	21 (100)
Level	R1	16 (89)	2 (11)	18 (100)
	R2	16 (84)	3 (16)	19 (100)
	R3	5 (50)	5 (50)	10 (100)
	R4	11 (65)	6 (35)	17 (100)

R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.

Analysis of Patients with Chronic Diseases being Counseled about Physical Activity by Family Medicine Residents

The analysis has shown that the Wald χ^2 test suggested that there was no statistically significant relationship between the patients with coronary heart disease being counseled about physical activity and any of the dependent variables except the gender of family medicine residents at the 0.05 level (χ^2 (1) = 4.7865, $p = 0.0287$). The Hosmer–Lemeshow goodness-of-fit tests suggest that the fitted model was adequate ($p = 0.4726$) [Table 10].

For gender, the odds ratio was 0.178 with 95% CI = (0.038, 0.836), indicating that the odds of patients with coronary heart

Table 4: Patients with coronary heart disease seeking advice on physical activity and the level of physical activity, gender, and level of family medicine residents

Characteristics		Patients with coronary heart disease seeking advice on physical activity		
		No (%)	Yes (%)	Total (%)
Level of physical activity	Low	27 (56)	21 (44)	48 (100)
	Moderate/high	10 (62)	6 (38)	16 (100)
Gender	Female	29 (67)	14 (33)	43 (100)
	Male	8 (38)	13 (62)	21 (100)
Level	R1	7 (39)	11 (61)	18 (100)
	R2	10 (53)	9 (47)	19 (100)
	R3	5 (50)	5 (50)	10 (100)
	R4	15 (88)	2 (12)	17 (100)

R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.

Table 5: Patients with hypertension seeking advice on physical activity and the level of physical activity, gender, and level of family medicine residents

Characteristics		Patients with hypertension seeking advice on physical activity		
		No (%)	Yes (%)	Total (%)
Level of physical activity	Low	15 (31)	33 (69)	48 (100)
	Moderate/high	2 (12)	14 (88)	16 (100)
Gender	Female	12 (28)	31 (72)	43 (100)
	Male	5 (24)	16 (76)	21 (100)
Level	R1	4 (22)	14 (78)	18 (100)
	R2	2 (11)	17 (89)	19 (100)
	R3	2 (20)	8 (80)	10 (100)
	R4	9 (52)	8 (47)	17 (100)

R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.

Table 6: Odds ratios

Variable	Odds ratio	95% CI
Level of physical activity (low vs. moderate/high)	0.155*	(0.025, 0.972)
Age	1.128	(0.833, 1.527)
BMI	1.055	(0.929, 1.198)
Gender (female vs. male)	1.039	(0.240, 4.497)
Specialty (R1 vs. R4)	9.623*	(1.098, 84.318)
Specialty (R2 vs. R4)	18.592*	(2.304, 150.059)
Specialty (R3 vs. R4)	4.540	(0.551, 37.388)

BMI, body mass index; CI, confidence interval; R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.

*Indicates significance at the 0.05 level.

Table 7: Patients with type 2 diabetes seeking advice on physical activity and the level of physical activity, gender, and level of family medicine residents

Characteristics		Patients with type 2 diabetes seeking advice on physical activity		
		No (%)	Yes (%)	Total (%)
Level of physical activity	Low	6 (13)	41 (87)	47 (100)
	Moderate/high	1 (6)	15 (94)	16 (100)
Gender	Female	4 (9)	39 (91)	43 (100)
	Male	3 (15)	17 (85)	20 (100)
Level	R1	1 (6)	17 (94)	18 (100)
	R2	1 (5)	18 (95)	19 (100)
	R3	1 (10)	9 (90)	10 (100)
	R4	4 (25)	12 (75)	16 (100)

R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.

Number of patients included after excluding missing data is 63.

disease being counseled about physical activity when the family medicine residents were women was 0.178 times the odds when the family medicine residents were men.

The results of the Wald χ^2 test suggested that the only statistically significant relationship was found between the patients with depression being counseled about physical activity and BMI of family medicine residents at the 0.05 level (χ^2 (1) = 4.6155, p = 0.0317). The Hosmer–Lemeshow goodness-of-fit tests suggest that the fitted model was adequate (p = 0.3290). For BMI, the odds ratio was 0.879 with 95% CI = (0.781, 0.989), indicating that for a one-unit increase in BMI of family medicine residents, we expect to see about 22% decrease in the odds of patients with depression being counseled about physical activity. In other words, patients with

Table 8: Patients with depression seeking advice on physical activity and the level of physical activity, gender, and level of family medicine residents

Characteristics		Patients with depression seeking advice on physical activity		
		No (%)	Yes (%)	Total (%)
Level of physical activity	Low	30 (67)	15 (33)	45 (100)
	Moderate/high	9 (60)	5 (40)	15 (100)
Gender	Female	29 (71)	12 (29)	41 (100)
	Male	10 (53)	9 (47)	19 (100)
Level	R1	9 (50)	9 (50)	18 (100)
	R2	16 (84)	3 (16)	19 (100)
	R3	5 (50)	5 (50)	10 (100)
	R4	9 (69)	4 (31)	13 (100)

R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.
Included number is 60.

Table 9: Patients with obesity seeking advice on physical activity and the level of physical activity, gender, and level of family medicine residents

Characteristics		Patients with obesity seeking advice on physical activity		
		No (%)	Yes (%)	Total (%)
Level of physical activity	Low	10 (23)	34 (77)	44 (100)
	Moderate/high	2 (14)	12 (86)	14 (100)
Gender	Female	6 (15)	33 (85)	39 (100)
	Male	6 (32)	13 (68)	19 (100)
Level	R1	6 (38)	10 (62)	16 (100)
	R2	2 (11)	17 (89)	19 (100)
	R3	1 (10)	9 (90)	10 (100)
	R4	3 (23)	10 (77)	13 (100)

R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.
Number included is 58.

Table 10: Patients with coronary heart disease being counseled about physical activity and the level of physical activity, gender, and level of family medicine residents

Characteristics		Patients with coronary heart disease being counseled about physical activity		
		No (%)	Yes (%)	Total (%)
Level of physical activity	Low	16 (33)	32 (67)	48 (100)
	Moderate/high	4 (25)	12 (75)	16 (100)
Gender	Female	17 (40)	26 (60)	43 (100)
	Male	3 (14)	18 (86)	21 (100)
Level	R1	7 (39)	11 (61)	18 (100)
	R2	5 (26)	14 (74)	19 (100)
	R3	2 (20)	8 (80)	10 (100)
	R4	6 (35)	11 (65)	17 (100)

R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.
Number included 64.

depression were less likely to be counseled about physical activity when the BMI of family medicine residents was higher [Table 11].

It is worth stating that the analysis of logistic regression to determine the relationship between the patients with obesity, HTN, and type 2 diabetes being counseled about physical activity, and the level of physical activity, age, BMI, gender, and training level of family medicine residents was unfortunately not performed because of some missing data about the level of physical activity, gender, and training level, these three variables cannot be included in the logistic regression, making the test irrelevant.

Table 11: Patients with depression being counseled about physical activity and the level of physical activity, gender, and level of family medicine residents

Characteristics		Patients with depression being counseled about physical activity		
		No (%)	Yes (%)	Total (%)
Level of physical activity	Low	17 (40)	29 (63)	46 (100)
	Moderate/high	6 (37)	10 (63)	16 (100)
Gender	Female	15 (37)	26 (63)	41 (100)
	Male	8 (38)	13 (62)	21 (100)
Level	R1	9 (50)	9 (50)	18 (100)
	R2	7 (37)	12 (63)	19 (100)
	R3	2 (20)	8 (80)	10 (100)
	R4	5 (33)	10 (67)	15 (100)

R1, first-year resident; R2, second-year resident; R3, third-year resident; R4, fourth-year resident.
Number included is 62.

Discussion

As mentioned earlier, studies have found that the physicians are generally more physically active than the general population.[8–10] In our survey, almost a quarter (25.7%) of the surveyed residents claimed that their level of physical activity was moderate/high. The majority (74%) of the family medicine residents were found to have low level of physical activity. This goes with the WHO's estimated high prevalence of inactivity among the Saudi adults.[6] These results do not match the earlier published results about the physical activity level among GPs in the Kingdom of Saudi Arabia, which reported higher levels of activity among them with only 35% of their surveyed physicians being inactive physically.[11] However, these results match the results of different studies conducted in the region and worldwide. In Bahrain, only 29% of the physicians' studies in 2003 were found to be active.[22] Among all GPs surveyed with the IPAQ in Ireland, 43% were found to be physically inactive.[10] Some degree of explanation with regard to the reported low physical activity of the family medicine resident included in the study can be comprehended because of the fact that they are residents still in training. This encompasses their difficult work load, exam preparations, and supervisors meetings, which may render it difficult for them to find time for exercise or to make it a priority for that matter.

Physical activity level of the family medicine residents did not depend nor vary according to the doctor's gender, BMI, age, and level of training year. This could be due to the small sample size used to establish a relationship between these variables.

We have found that patients with type 2 diabetes most often sought advice on physical activity (90%) from their family medicine residents, and that the patients with depression least often sought advice on it from the residents (36%). We have also found that family medicine residents were active in counseling patients with type 2 diabetes and obesity about physical activity (96%), and that they were not much active in counseling patients with depression about physical activity (64%). This can be attributed to the lack of drive depressed patients have to seek advice from their physicians and is an eye opener for us as family physicians to be proactive in counseling these patients about physical activity as it may enhance their mood and improve their health globally.[23]

In determining the most important factors contributing to the health of patients, it appeared that family medicine residents have viewed nonsmoking as the most important factor and nonconsumption of alcohol as the least important. The ranking of contributors to health was in the same manner in other published studies as viewed by family physicians around the world.[20]

Conclusion

Although residents of the joint family medicine program of the eastern province of the Kingdom of Saudi Arabia were not, self-reportedly, physically active themselves, they were active in patient counseling regarding the importance of physical activity in achieving global health and well-being.

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