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Original Research Article.

Physical Activity Among Family Medicine Trainees in Makkah Almukarramah City, Saudi Arabia

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ABSTRACT

Background: It is recognized that the health of physicians directly impacts the health of the larger population, as numerous studies have established a link between the health behaviors of physicians and their interactions with patients.

Objectives: To assess physical activity practice among the family medicine trainees in Makkah AlMukarramah and its association with various socio-demographic as well as to identify the main barriers of being physically active from the participants' prospective.

Methods: A cross-sectional study was implemented included all family medicine trainees in Makkah AlMukarramah. Self-administered questionnaire was used for data collection. It consisted of three parts: The first part contains questions about socio-demographic characteristics of the participants. The second part inquired about participants` physical activity. The short form of the International Physical Activity Questionnaire (IPAQ) that provide common instrument to estimate the level of physical activity has been utilized in this regard. The third part of the questionnaire inquires about barriers for being physically active (12 items) as well as reasons for being physically active (7 items).

Results: The study included 60 family medicine trainees with a response rate of 98.4%. Their age ranged between 25 and 35 years with a mean of 28.17 years and standard deviation of 2.38 years. More than half of them (55%) were females. Most of them (71.7%) were married. All were Saudis. According to the he short form of the International Physical Activity Questionnaire (IPAQ), almost half (48.3%) of family medicine trainees had low level of physical activity whereas 40% had moderate level of physical activity. Only 11.7% of them reported high level of physical activity. Regarding duration of sitting (minutes/day), slightly less than half of the family medicine trainees (48.3%) reported sitting period more than 360 minutes/day. High level of physical activity was reported among 14.8% of male family medicine trainees compared to 9.1% of females. In addition, moderate level of physical activity was higher reported among males than females (59.3% versus 24.2%). This difference was statistically significant, p=0.007. Lack of time to exercise because of academic and work responsibilities, less suitable places to exercise particularly, no exercise facilities at home and having other recreational activities to do with friends were the commonest reported barriers for being physically active.

Conclusions: Almost half of family medicine trainees in Makkah had low level of physical activity. Males had significant higher level of physical activity than females. Overcoming the barriers together with consideration of family medicine trainees' suggestions may contribute to a further increase in the level of physical activity among them.

Keywords: Physical Activity, Family Medicine, Trainees, The International Physical Activity Questionnaire.

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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 disease, stroke, diabetes mellitus, Alzheimer disease, depression, osteoporosis, cancer and obesity.[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]

It is recognized that the health of physicians directly impacts the health of the larger population, as numerous studies have

established a link between the health behaviors of physicians and their interactions with patients.[5]

It is desirable that physicians lead a favorable lifestyle not only for their own health but also in view of their role in providing guidance for patients. It has been pointed out that physicians tend to turn a blind eye to their own unfavorable lifestyle habits, and to be less assertive and proactive about providing patients with guidance for a better lifestyle if they are not practicing it themselves.[6]

Against this background, enlightening activities have been actively pursued by national medical associations in various overseas countries, as part of an effort to promote physicians leading a favorable lifestyle in order to protect their own health.[7]

While the statistics among physicians may simply reflect a larger cultural problem, there may also be factors specific to medicine that discourages physical activity. A study of medical students showed that weekly exercise decreases throughout medical training, most likely due to increased workloads and long hospital shifts during the clinical years.[8]

Many studies addressed questions about the leisure activities of doctors, but consisted either of paeans to the need for doctors to relax and look after themselves more or to be more involved in leisure, or were descriptions of the leisure activities of particular doctors.[9,10]

A further set of articles assessed job and life satisfaction in doctors, and often but not always, reported dissatisfaction with time available for leisure activities[11-14], with sufficient time for leisure activities correlating with quality of life measures[15], and not having hobbies being a risk factor for hypertension in doctors.[16]

Some studies also reported higher life satisfaction, including participation in hobbies and leisure activities, in retired doctors.[17]

A few studies looked at leisure activities in relation to formal measures of stress or burnout, and reported that having a hobby correlated with lower levels of burnout in general[18], with emotional exhaustion[19,20] or with job stress.[21]

This study aimed at increasing the awareness regarding the importance of physical activity and exploring more methods for increasing physical activity among young medical staff.

SUBJECTS AND METHODS

Cross sectional study was carried out among family medicine trainees, family medicine units, Makkah Al-Mukarramah. Because of the small number of our study population (n=61). All of them were invited to participate in the study. Self-administered questionnaire was used for data collection.

It consisted of three parts:

The first part contains questions about socio-demographic characteristics of the participants (age, gender, nationality, marital status, residence level, smoking history, history of chronic diseases, weight and height).

The second part inquired about participants` physical activity. The short form of the International Physical Activity Questionnaire (IPAQ) that provide common instrument to estimate the level of physical activity has been utilized in this regard.[22] The IPAQ short version estimates how much health enhancing physical activity, including daily life activities and exercise, the person has undertaken over the previous 7 days. The questionnaires were distributed to all family medicine trainees during their doctors meeting. The reliability and validity of the questionnaire were tested across 12 countries (14 sites) in 2000.[23] The findings suggest that it has acceptable tool for use in many settings and in different languages, and is suitable for use in regional, national and international monitoring and surveillance system and for use in research projects and public health program planning and evaluation.[24]

The IPAQ included questions about physical activity of 3 intensities (vigorous physical activity, moderate physical activity, and walking). The physicians had to estimate how many days (frequency) he/she was physically active and the average time (duration) that he/she spent being physically active on these days. We calculated the total physical activity, MET or metabolic equivalent (MET min/week), as suggested in the Guidelines for Data Processing and Analysis of the International Physical Activity Questionnaire for the sum of walking, and moderate, and vigorous physical activity.[25] IPAQ classifies the subjects into three categorical (ordinal) levels based on intensity, duration and the frequency of the physical activity.[23] The tool asks for times that individual spent in walking, moderate- and vigorous-intensity physical activities. The volume of activity can be computed by weighting each type of activity by its energy requirements (METs). METs are multiples of resting metabolic rate and a MET- minute is computed by multiplying the MET score of activity by the minutes performed.[22] Metabolic equivalent (MET) is a unit used to estimate the metabolic cost (oxygen consumption) of physical activity. One MET equals the resting metabolic rate of approximately 1 kcal/kg/h. MET-minutes is the rate of energy expenditure expressed as METs per minute multiplied by minutes of a specific activity.[26] Using the Ainsworth et al. compendium of the average MET score for each type of activity[26], the following values were used for the analysis of IPAQ data: walking at work = 3.3 METs, cycling for transportation = 6.0 METs, moderate yard work = 4.0 METs and vigorous intensity in leisure = 8.0 METs.[27]

The third part of the questionnaire inquires about barriers for being physically active (12 items) as well as reasons for being physically active (7 items). Respondents who had low physical activity were asked to mention the barriers for being physically active while those who had moderate or high physical activity were asked to mention the reasons for that. A 5-likert scale was used in this part of the questionnaire ranged between strongly agree “1” to strongly disagree “5”. Body mass index (BMI) was calculated and classified according to WHO criteria into: underweight (BMI <15.8 kg/m^2), normal (BMI 18.5–24.9 kg/ m^2), overweight (BMI 25–29.9 kg/m^2) and obesity (BMI ≥ 30 kg/m^2). Agreement to participate in the study as indicated in the first page of the questionnaire was considered as an informed consent. All participants had the right not to participate in the study or to withdraw from it prior to completion.

The data were collected and verified by hand then coded before computerized data entry. The statistical Package for Social Sciences (SPSS) software version 24.0 was used for data entry and analysis. Descriptive statistics (e.g. frequency, percentage, mean, range, standard deviation) and analytic statistics using chi-square test (χ^2) were applied. P-values ≤0.05 will be considered as statistically significant.

RESULTS

Out of 61 family medicine trainees recruited for study, 60 responded by filling in the study questionnaire, giving a response rate of 98.4%. Their personal characteristics are presented in

table 1. Their age ranged between 25 and 35 years with a mean of 28.17 years and standard deviation of 2.38 years. More than half of them (55%) were females. Most of them (71.7%) were married. All were Saudis.

Residency levels 1 and 2 together represent 56.6% of them (28.3% for each level) while residency levels 3 and 4 represent 20% and 23.4% of them, respectively. History of current smoking was reported by 18.3% of the respondents. Among them, 54.5% smoked cigarettes while 45.5% and 27.3% smoked shisha and moasal, respectively. History of chronic diseases was cited by 8 family medicine trainees representing 13.3% of the total respondents. Half of them had bronchial asthma while the remaining half had either hypercholesterolemia or diabetes mellitus (25% for each).

Table 1: Personal characteristics of family medicine trainees, Makkah

Personal characteristics		Frequency	Percentage
Age (years)	**<30**	46	76.7
	≥30	14	23.3
Range		25-35	
Mean±SD		28.17±2.38	
Gender	**Male**	27	45.0
	Female	33	55.0
Marital status	**Single**	17	28.3
	Married	43	71.7
Residency level	**1st**	17	28.3
	2nd	17	28.3
	3rd	12	20.0
	4th	14	23.4

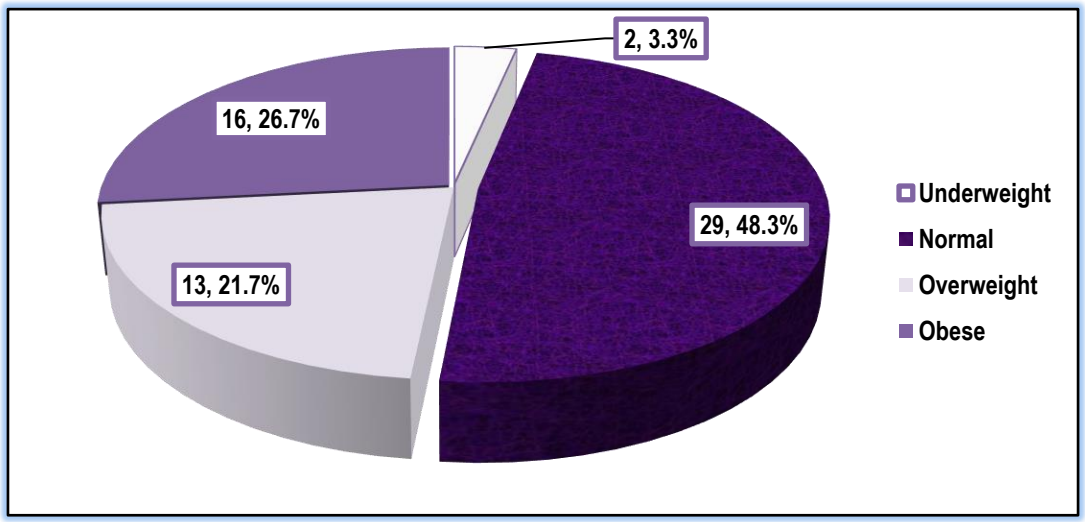

Figure 1: Body mass index distribution of family medicine trainees, Makkah.

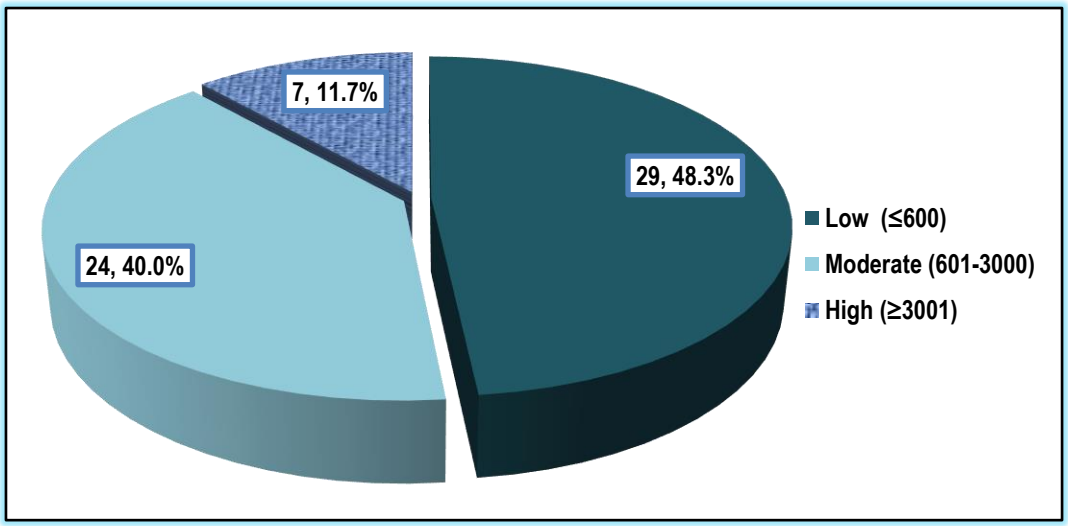

Figure 2: Level of physical activity (MET min/week) among family medicine trainees, Makkah.

As illustrated from figure 1, more than a quarter of family medicine trainees (26.7%) were obese and 21.7% were overweight whereas 48.3% were normal. According to the short form of the International Physical Activity Questionnaire (IPAQ), almost half (48.3%) of family medicine trainees had low level of physical activity whereas 40% had moderate level of physical activity. Only 11.7% of them reported high level of physical activity. (Figure 2) Regarding duration of sitting (minutes/day), slightly less than half of the family medicine trainees (48.3%) reported sitting period more than 360 minutes/day.

Table 2: Family medicine trainee`s factors associated with level of physical activity.

		Level of physical activity			χ^2 value	p-value
		Low N=29 N (%)	Moderate N=24 N (%)	High N=7 N (%)		
Age (years)	**<30 (n=46)**	23 (50.0)	16 (34.8)	7 (15.2)	3.59	0.167
	≥30 (n=14)	6 (42.9)	8 (57.1)	0 (0.0)		
Gender	**Males (n=27)**	7 (25.9)	16 (59.3)	4 (14.8)	10.10	0.007
	Females (n=33)	22 (66.7)	8 (24.2)	3 (9.1)		
Marital status	**Single (n=17)**	7 (41.2)	8 (47.1)	2 (11.8)	0.55	0.761
	Married (n=43)	22 (51.2)	16 (37.2)	5 (11.6)		
Residency level	**1st (n=17)**	6 (35.3)	8 (47.1)	3 (17.6)	3.90	0.691
	2nd (n=17)	11 (64.7)	5 (29.4)	1 (5.9)		
	3rd (n=12)	5 (41.7)	5 (41.7)	2 (16.6)		
	4th (n=14)	7 (50.0)	6 (42.9)	1 (7.1)		
Smoking	**No (n=49)**	24 (49.0)	19 (38.8)	6 (12.2)	0.20	0.905
	Yes (n=11)	5 (45.5)	5 (45.5)	1 (9.0)		
Chronic diseases	**No (n=52)**	27 (51.9)	19 (36.5)	6 (11.5)	2.21	0.331
	Yes (n=8)	2 (25.0)	5 (62.5)	1 (12.5)		
Sitting (minutes/day)	**≤360 (n=31)**	19 (61.2)	6 (19.4)	6 (19.4)	12.31	0.002
	>360 (n=29)	10 (34.5)	18 (62.1)	1 (3.4)		
Body mass index	**Normal * (n=31)**	15 (48.4)	10 (32.3)	6 (19.4)	4.63	0.328
	Overweight (n=13)	7 (53.8)	6 (46.2)	0 (0.0)		
	Obese (n=16)	7 (43.8)	8 (50.0)	1 (6.3)		

* Two underweight cases were added to normal category

Table 3: Barriers of being physically active among family medicine trainees with low level of physical activity (n=29).

Statement	Strongly Agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly Disagree N (%)
▪ **Exercise is hard work I am fatigued by it**	0 (0.0)	5 (17.2)	7 (24.1)	11 (37.9)	6 (20.7)
▪ **I have no sufficient energy for exercise because of health problems**	0 (0.0)	1 (3.4)	2 (6.9)	7 (24.1)	19 (65.5)
▪ **I have other recreational activities to do with friends**	1 (3.4)	5 (17.2)	10 (34.5)	8 (27.6)	5 (17.2)
▪ **I am too embarrassed to exercise**	0 (0.0)	2 (6.9)	6 (20.7)	6 (20.7)	15 (51.7)
▪ **I `m not sure of my ability to exercise efficiently**	1 (3.4)	5 (17.2)	8 (27.6)	5 (17.2)	10 (34.5)
▪ **There are too few suitable places to exercise in my region**	9 (31.0)	16 (55.2)	2 (6.9)	2 (6.9)	0 (0.0)
▪ **I have no exercise facilities at home**	5 (17.2)	12 (41.4)	3 (10.3)	6 (20.7)	3 (10.3)
▪ **My family and friends do not encourage exercising**	6 (20.7)	9 (31.0)	7 (24.1)	5 (17.2)	2 (6.9)
▪ **I am giving priority to study and work than exercise**	17 (58.6)	6 (20.7)	5 (17.2)	0 (0.0)	1 (3.4)
▪ **I have no enough time to exercise because of my academic curriculum and work**	13 (44.8)	10 (34.5)	3 (10.3)	2 (6.9)	1 (3.4)
▪ **I have no enough time to exercise because of my family and social relationships**	10 (34.5)	10 (34.5)	6 (20.7)	1 (3.4)	2 (6.9)
▪ **It costs too much money to exercise**	3 (10.3)	2 (6.9)	3 (10.3)	10 (34.5)	11 (37.9)

Table 4: Reasons for being physically active among family medicine trainees with moderate or high level of physical activity (n=31).

Statement	Strongly agree N (%)	Agree N (%)	Neutral N (%)	Disagree N (%)	Strongly Disagree N (%)
▪ I know that exercise has positive impact on health	30 (96.8)	1 (3.2)	0 (0.0)	0 (0.0)	0 (0.0)
▪ Feel more energized that helps me to study and work	21 (67.7)	10 (32.3)	0 (0.0)	0 (0.0)	0 (0.0)
▪ Improve overall appearance	26 (83.9)	5 (16.1)	0 (0.0)	0 (0.0)	0 (0.0)
▪ Burn more calories to compensate calories gained from social occasions	27 (87.1)	4 (12.9)	0 (0.0)	0 (0.0)	0 (0.0)
▪ Be able to withstand stress	16 (51.6)	12 (38.7)	3 (9.7)	0 (0.0)	0 (0.0)
▪ Keep focused	17 (54.8)	11 (35.5)	3 (9.7)	0 (0.0)	0 (0.0)
▪ To be an ideal model for my patients	16 (51.6)	11 (35.5)	3 (9.7)	0 (0.0)	1 (3.2)

As shown in table 2, high level of physical activity was reported among 14.8% of male family medicine trainees compared to 9.1% of females. In addition, moderate level of physical activity was higher reported among males than females (59.3% versus 24.2%). This difference in level of physical activity between male and female family medicine trainees was statistically significant, p=0.007. Family medicine trainees who sit less than 6 hours per day reported significantly higher level of physical activity compared to those who sit more than 6 hours per day (19.4% versus 3.4%, p=0.002). Others studied factors were not associated significantly with level of physical activity.

Table 3 describes the opinions of family medicine trainees who were physically inactive (having low level of physical activity score) regarding the possible cause/s of being physically inactive. Majority of them either strongly agreed or agreed that there are too few suitable places to exercise in their region (86.2%), they have no enough time to exercise because of their academic curriculum and work (79.3%), They giving priority to study and work than exercise (79.3%) and they have no enough time to exercise because of their family and social relationships (69.0%). Almost half of them either strongly agreed or agreed that they have no exercise facilities at home (58.6%), and their family and friends do not encourage exercising (51.7%).

Table 4 describes the opinions of family medicine trainees, who had either moderate of high level of physical activity score, regarding the possible reason/s of being physically active. All of them either strongly agreed or agreed that they know that exercise have positive impact on health, it improves overall appearance, it burns more calories to compensate calories gained from social occasions and they feel more energized that helps them to study and work. Majority of them either strongly agreed or agreed that exercise let them able to withstand stress (90.3%), keep focused (90.3%) and to be an ideal model for their patients (87.1%).

DISCUSSION

The study included 60 family medicine trainees with a response rate of 98.4%. This high response rate can probably be ascribed to the researcher herself through personal contact with family medicine trainees as well as to the explanation of the purpose of the study, scientific importance and value of the study to everyone. According to Rosnow and Rosenthal (1999)[28] these techniques (e.g. personal contact, using reminders and explaining the scientific importance and value of the study, ensuring the participants confidentiality) are linked to increase participation in surveys.

The alarming problem of a decline in physical activity and its detrimental effects on public health has been well recognized worldwide.[29]

In a study conducted by Al-Hazzaa in Riyadh[30], using the short-version telephone format of IPAQ, not many Saudi adults living in Riyadh were sufficiently vigorously active, based on 3 or more days per week of vigorous activity for at least 20 min or more per day. However, nearly half of the population was sufficiently moderately active, based on 5 or more days per week of moderate and walking activities for at least 30 min or more per day. In addition, inactivity prevalence among both sexes averaged 40.6%, while the proportion of people meeting so-called health-enhancing physical activity levels was only 25.1%. A previous survey estimated the prevalence of inactivity in Saudi Arabia to range from 43.3% to as high as 99%.[31] Elsewhere, not many studies have reported physical activity data based on IPAQ. A Brazilian survey using the IPAQ short-form instrument found inactivity prevalence of 41.1% among Brazilian adults aged 20 years and above.[32] In the present study, IPAQ-short form was utilized and the prevalence of low physical activity among family medicine trainees was 48.3%.

Suija et al[33] reported a prevalence of 8% among family medicine doctors in Estonia using the same tool.

The physician's level of physical activity (low, moderate, or high) in the present study was not related to age, residency level, marital status, BMI, smoking and chronic diseases history of family medicine trainees. Thus, we cannot claim that physical activity depends on these factors. The same has been reported in a study conducted among family medicine doctors in Estonia.[33]

In the current study, the most prominent finding was that physical activity was significantly higher among male than female family medicine trainees and in addition, two-thirds of females had low physical activity level. These findings could be analyzed in the context of the Saudi social system and the role of women in this system. Conservative social norms defining the roles for males and females in Muslim countries influence the context in which they can be physically active and reduce potential weight gain.[34] In Saudi Arabia, women have restrictions to movement outside their homes and limited opportunities to attend health centers.[35] In

addition, the hot climate, high dependency on automobiles, as well as the employment of domestic helpers, seems to contribute to low levels of activity in daily life.[34]

The social structure in Saudi Arabia tends to remain male-dominated, collectivistic, and patriarchal, with great emphasis on family values and group cohesiveness. Consequently, women who grow up in this kind of society may develop a lower internal sense of control and lower confidence level. This may carry even broader implications, since women will not play their important role in encouraging health behaviors in the family setting and on the community level.[36]

This pattern seems to be beginning to reverse itself, since the Saudi society is undergoing a major modernization process in health and other services, resulting from higher urbanization, more education, and more women working outside the home. This was accompanied by a government reform in favor of women and recent legislation to empower women to play their role in the development of the country.[37]

Data from the WHO (2009) also showed that physical inactivity is globally more prevalent among girls and women than their male counterparts.[38] Many factors hinder the participation of women in physical activity, including lower income for women, required agreement from a senior member of the household to engage in physical activity, having a greater workload in the home and care-giving roles, limited mobility, and cultural restrictions.[38]

The study showed that more than 86% of participants of both genders with low physical activity level agreed that there are too few suitable places to exercise in their region and more than 79% of them agreed that they have no enough time to exercise because of their academic curriculum and work. Likewise a study by Rao CR et.al revealed lack of time and lack of motivation or will as the most significant barrier for practicing regular physical activity by over 50% of the medical professionals.[39] Other studies revealed lack of suitable places, time, financial limits and lack of facilities as a barrier to physical activity.[40-42]

The study also has some limitations, one being limitation is the sample. Although, the sample was quite small however, the response rate was very high and it involved ~99% of the family medicine trainees in Makkah, Saudi Arabia.

Another limitation is the possible risk of overestimation or underestimation where physical activity is self-reported. The self-reported total physical activity scores alone do not yield a complete pattern of physical activity. On the other hand, the questionnaire is the most widely used method in epidemiological studies, while laboratory methods are more expensive and mainly employed for validation purposes.[43]

Hence it is evident that validated self-reported questionnaires like the IPAQ are suitable for everyday practice.[44] 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 family medicine trainee in Makkah, thus the findings cannot be generalized beyond those in other areas in KSA. Despite these limitations, findings from this study have tentative implications for public health policies and programs.

In conclusion, almost half of family medicine trainees in Makkah had low level of physical activity. Males had significant higher level of physical activity than females. There are many barriers to physical activity including lack of time to exercise because of academic and work responsibilities, less suitable places to exercise particularly, no exercise facilities at home and having other recreational activities to do with friends. Overcoming these barriers together with consideration of family medicine trainees' suggestions may contribute to a further increase in the level of physical activity among them.

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