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**Original Research Article**

# Physical activity and perceived barriers among doctors working in King Abdulaziz Hospital, Jeddah, 2018

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## ABSTRACT

**Background:** Physical inactivity is a major public health problem worldwide, and Saudi Arabia has been identified as one of the countries with the highest prevalence of physical inactivity. This study seeks to determine the physical activity levels and to identify the perceived barriers against physical activity among doctors.
**Methods:** We performed a cross-sectional study involving all physicians practicing in King Abdulaziz Hospital in Jeddah, Saudi Arabia. All doctors holding administrative positions during the conduct of the survey were excluded from the study. Systematic random sampling was used to select the doctors. A previously published and validated self-administered questionnaire was used in the study. The results of the study were analyzed using IBM SPSS version 23.
**Results:** Among the 178 physicians surveyed, more than half (74.6%) reported having regular physical activity. Among the 129 doctors who reported low to high physical activity, 50.0% were in the moderate to high category, meanwhile only 23.7% were in the low category. We found a significant relationship between the level of physical activity and perceived total exercise benefits/barriers ($p<0.001$), exercise benefits (p-value=0.009), and exercise barriers ($p<0.001$).
**Conclusions:** Most of the physicians were physically active. However, there is still a need to encourage physicians to improve their physical activity, which would improve their perception of exercise and set them as better role models for physical activity among their patients and the communityz.

**Keywords:** Physical activity, Doctors, Barriers, Healthy lifestyle

## INTRODUCTION

Physical activity (PA) is described as any movement using the body caused by the contraction of skeletal muscle that increases energy expenditure above the basal level.[1] PA is important in order to maintain a healthy lifestyle and overall well-being. According to the World Health Organization (WHO), the recommended PA for a healthy individual is as follows: 150 minutes of moderate intensity aerobic PA per week, or a minimum of 75 minutes of vigorous-intensity aerobic PA per week, or equivalent combination of moderate-intensity aerobic PA and vigorous intensity aerobic PA.[2]

It has been reported that non-communicable diseases (NCDs) is one of the major causes of mortality around the globe.[3] Moreover, PA has an essential role as the first line of defense in the prevention of NCDs.[1] The lack of physical activity was shown as the fourth leading cause of death with an estimated 6% cases globally.[2]

Physical inactivity is considered as a major public health problem in the world. In the past decades, the Kingdom of Saudi Arabia has developed an alarming increase in prevalence of NCDs.[4] During this time, KSA was proactive in promoting changes in lifestyle and socioeconomic status. In 2005, the WHO reported that in KSA, more than two thirds (68%) of the people show low physical activity, less than fifth (16%) show moderate activity, and (16%) show high activity among male and female aged from 15-65 years old.[5] A national epidemiological health survey conducted during 1995 to 2000 showed that among the 17,395 Saudi males and females involved in the study, aged from 30 to 70 years old, it was revealed that females were more inactive (98.1%) than their male counterpart (93.9%).[6]

Only a few researches have been published regarding the barrier of PA among Saudi residents. According to previous studies, barriers such as lack of sports facilities, lack of support, and lack of time were some of the external factors that may have caused this problem. Meanwhile, personal reasons such as lack of self-motivation, inadequate skills and energy, and fear of being hurt were raised by several individuals hindering them from being physically active.[6,7]

Since the primary health care physicians are first-in-line in the health care system and have an essential role in promoting awareness on healthy lifestyle, it is important to investigate the barriers of PA among them. Furthermore, recognizing the barriers to perform physical activity and implementing strategies to overcome these problems may assist in increasing their physical activity level and make it a part of their daily lifestyle.

Ultimately, the general aim of this study was to increase the awareness of the importance of PA, and to provide and inform policy makers by the evidence of the barriers of physical activity among doctors working in King Abdulaziz Hospital.

This study specifically seeks to:

- Determine the physical activity levels among physicians working in King Abdulaziz Hospital; and
- Identify the perceived barriers against physical activity among doctors working in King Abdulaziz Hospital at Jeddah, KSA in 2018.

## METHODS

### *Study design*

We performed a cross-sectional study involving all physicians practicing at King Abdulaziz Hospital in Jeddah, Saudi Arabia from October 2018 to November 2018. All doctors holding administrative positions during the conduct of the survey were excluded from the study. Among the 17 departments in the hospital, systematic random sampling was used to select the doctors from each department who are qualified based on the inclusion and exclusion criteria and were present on the day of data gathering.

### *Research instrument*

A previously published and validated self-administered questionnaire was used in the study.[2,5,8] The questionnaire consisted of three main parts. The first part of the questionnaire included socio-demographic data and job characteristics of the participants. The second part consisted of four parts namely: vigorous intensity activity, moderate intensity activity, walking for at least 10 minutes at one time, and hours spent sitting and/or lying down (excluding sleeping) per day. The third part of the questionnaire focused on determining the exercise barriers and benefits perceived by the doctors. This part consisted of 43 items, wherein 14 items were connected to the Barriers Scale and 29 pertaining to the Benefits Scale.

### *Data collection*

A pilot study was conducted on 20 physicians on September 2018 from King Abdulaziz hospital, in order to test the validity of the questionnaire. After validation, modifications were made. The results of the pilot study were not included in the final analysis.

After getting the approval from King Abdulaziz Hospital director in Jeddah, the researcher distributed the self-administered questionnaires to physicians during working hours (8 AM to 4 PM) from October to November 2018. The questionnaires are collected 2 days after they were given to the respondents.

### *Sample size calculation*

Using the Raosoft calculator, sample size was calculated according to the following criteria: confidence level of 95%, an expected proportion of the population with adequate knowledge of 50%, and a margin of error of 5%. A total sample size of 173 physicians was computed.

### *Sample population*

Out of the 173 prospective respondents, all of them responded in the survey, giving a 100% response rate.

### *Study variables*

The prevalence and level of physical activity among doctors and their perceived benefits/barriers to exercise were identified as the dependent variables. There were 4 levels of physical activity namely: no physical activity, low, moderate, and vigorous. Low physical activity included walking and sitting in the last 7 days. This entails walking at work and at home, walking to travel from place to place, and any other walking done solely

for recreation, sports, exercise or leisure for at least 10 minutes at a time. Moreover, sitting included time spent at work, at home, while doing course work and during leisure time. This may include time spent sitting at a desk, visiting friends, reading, or sitting or lying down to watch television. Meanwhile, moderate physical activities refer to activities done in the last 7 days that take moderate physical effort and that result to breathing harder than normal. This may include activities like carrying light loads, bicycling at a regular pace, or double tennis done for at least 10 minutes at a time. Lastly, vigorous activities refer to activities that take hard physical effort done in the last 7 days and result to breathing much harder than normal. This may include activities such as heavy lifting, digging, aerobics, or fast bicycling done for at least 10 minutes at a time. On the other hand, the independent variables included the demographic characteristics of the study samples (gender, age, BMI, work experience, nationality, marital status, educational level, smoking, work position, chronic health problems and specialization).

### *Data interpretation and statistical analysis*

The EBBS (exercise benefits/barriers scale) data score are computed by simple additive method. The total exercise benefits/barriers scale was composed of all the questions from exercise benefits scale and exercise barriers scale. Exercise barriers scale items are reverse-scored.

This study was analyzed using IBM SPSS version 23. A simple descriptive statistics was used to define the characteristics of the study variables by means of a form of categorical counts and percentages and nominal variables while continuous variables are presented by mean and standard deviations. We also used chi-square test in order to establish a relationship between categorical variables. While comparing two group means and more than two groups, an independent *t*-test and One-way ANOVA, with least significant difference (LSD) as a post-hoc test, respectively, was used. These tests were done with the assumption of normal distribution. Otherwise, Welch's *t*-test for two group means and Games Howell for multiple groups were used as an alternative for the LSD test. To correlate variables which both represented by means, a Pearson's correlation coefficient was used. Lastly, a conventional $p<0.05$ was the criteria to reject the null hypothesis.

### *Ethical considerations*

Approval from the local research committee from the Joint Program of Family Medicine in Jeddah and from the director of King Abdulaziz Hospital in Jeddah was obtained. Written consent for participation was obtained from each participant. All collected data was kept confidential and access was restricted to this scientific research. Ethical considerations were followed throughout the study.

## RESULTS

Demographic and job characteristics of the sample population (n=173) are shown in Table 1. The age of the participants ranged from 25 to 62 years old with an average of 30.37±6.1. The average BMI was 27.18±22.8 (n=46), with mean weight of 71.64±14.5 (n=157) and mean height of 167.87±9.2 (n=154). Doctors included in this study had work experience at an average of 63.53±70.7 months (n=146). Among the 173 total samples, more than half were male (57.8%), Saudi national (76.9%), single (54.7%), holding a bachelor's degree (52.0%), and non-smoking (59.3%). Majority of the participants were residents (46.2%), and without any chronic health problems (91.3%). Among the 15 doctors who had health issues, 33.3% had diabetes, 26.7% had hypertension, 20.0% had asthma, 13.3% had hypothyroidism, and 6.7% had issues in Gynecology. One-hundred twenty-three (71.1%) participants had specialization.

**Table 1: Demographic and job characteristics of the study population (n=173).**

| Characteristics | N | Min | Max | Mean | SD |
|---|---|---|---|---|---|
| **Age** | 173 | 25 | 62 | 30.37 | 6.1 |
| **BMI** | 46 | 14 | 174 | 27.18 | 22.8 |
| **Weight** | 157 | 38 | 115 | 71.64 | 14.5 |
| **Height** | 154 | 148 | 196 | 167.87 | 9.2 |
| **Work experience (months)** | 146 | 3 | 396 | 63.53 | 70.7 |
| | | **Count** | | **%** | |
| **Total** | | 173 | | 100.0 | |
| **Gender** | Male | 100 | | 57.8 | |
| | Female | 73 | | 42.2 | |
| **Nationality** | Saudi | 133 | | 76.9 | |
| | Non-Saudi | 40 | | 23.1 | |
| **Marital state** | Single | 94 | | 54.7 | |
| | Married | 76 | | 44.2 | |
| | Divorced | 2 | | 1.2 | |
| | Missing | 1 | | | |

Continued.

| | | Count | % |
|---|---|---|---|
| **Educational level** | Bachelor | 90 | 52.0 |
| | Diploma | 10 | 5.8 |
| | Board | 53 | 30.6 |
| | Master | 13 | 7.5 |
| | PhD | 7 | 4.0 |
| **Smoking** | Non-Smoker | 102 | 59.3 |
| | Current Smoker | 58 | 33.7 |
| | Ex-Smoker | 12 | 7.0 |
| | Missing | 1 | |
| **Work position at KAH** | Consultant | 20 | 11.6 |
| | Specialist | 26 | 15.0 |
| | Registrar | 20 | 11.6 |
| | Resident | 80 | 46.2 |
| | GP | 26 | 15.0 |
| | Intern | 1 | .6 |
| **Chronic health problems** | No | 158 | 91.3 |
| | Yes | 15 | 8.7 |
| **If yes specify chronic health problems** | Asthma | 3 | 20.0 |
| | Diabetes | 5 | 33.3 |
| | Gynecology | 1 | 6.7 |
| | HTN | 4 | 26.7 |
| | Hypothyroidism | 2 | 13.3 |
| **Do you have specialty** | No | 50 | 28.9 |
| | Yes | 123 | 71.1 |

**Table 2: Pattern of physical activity of the study population (n=173).**

| | | | | Count | % |
|---|---|---|---|---|---|
| **Total** | | | | 173 | 100.0 |
| **During the last 7 days, on how many days did you do vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling?** | No Vigorous physical activities | | | 110 | 63.6 |
| | 1-3 days | | | 26 | 15.0 |
| | More than 3 days | | | 37 | 21.4 |
| | **N** | **Min** | **Max** | **Mean** | **SD** |
| **How much time did you usually spend doing vigorous physical activities on one of those days? (Mins)[a]** | 55 | 15 | 480 | 100.28 | 82.4 |
| | | | | **Count** | **%** |
| **During the last 7 days, on how many days did you do moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis? Do not include walking** | No Moderate physical activities | | | 101 | 58.4 |
| | 1-3 days | | | 42 | 24.3 |
| | More than 3 days | | | 30 | 17.3 |
| | **N** | **Min** | **Max** | **Mean** | **SD** |
| **How much time did you usually spend doing moderate physical activities on one of those days? (Mins)[b]** | 54 | 10 | 1800.00 | 201.96 | 320.7 |
| | | | | **Count** | **%** |
| **During the last 7 days, on how many days did you walk for at least 10 minutes at a time?** | No Walking | | | 54 | 31.2 |
| | 1-3 days | | | 26 | 15.0 |
| | More than 3 days | | | 93 | 53.8 |
| | **N** | **Min** | **Max** | **Mean** | **SD** |
| **How much time did you usually spend walking on one of those days? (Mins)[c]** | 99 | 10 | 600.00 | 120.02 | 133.5 |
| **During the last 7 days, how much time did you spend sitting on a week day? (Mins)[d]** | 100 | 18 | 1200.00 | 328.73 | 223.8 |

a-8 missing values; b-18 missing values; c-20 missing values; d-73 missing values

**Table 3: Pattern of physical activity among participants based on the IPAQ data short form.**

| | N | Min | Max | Mean | SD |
|---|---|---|---|---|---|
| | | Count | | % | |
| **Total** | | 164 | | 100 | |
| **Physical activity** | No | 44 | | 25.4 | |
| | Yes | 129 | | 74.6 | |
| **Categorical score** | No physical activity | 44 | | 25.4 | |
| | Low | 41 | | 23.7 | |
| | Moderate | 38 | | 22.0 | |
| | High | 50 | | 28.9 | |
| | **N** | **Min** | **Max** | **Mean** | **SD** |
| **Total Exercise benefits/barriers scale** | 173 | 75 | 163 | 124.57 | 12.4 |
| **Exercise benefits scale** | 173 | 50 | 116 | 91.37 | 11.6 |
| **Exercise barriers scale** | 173 | 19 | 56 | 36.8 | 7.3 |

**Table 4: Relationship between categorical score and exercise benefits/barrier scale.**

| Variables | Total | Categorical score | | | | P value |
|---|---|---|---|---|---|---|
| | | No physical activity | Low | Moderate | High | |
| **Total exercise benefits/ barriers scale** | 124.57±12.4 | 117.61±10.9 | 125.37±11.1 | 125.08±12.3 | 129.64±12.4 | <0.001[a] |
| **Exercise benefits scale** | 91.37±11.6 | 89.73±12.7 | 91.12±11.5 | 87.84±9.1 | 95.70±11.3 | 0.009[a] |
| **Exercise barriers scale** | 36.80±7.3 | 42.11±6.5 | 35.76±7.6 | 32.76±6.1 | 36.06±6.2 | <0.001[a] |

[a]significant using One Way ANOVA @<0.05 level.

***Pattern of physical activity among the study participants***

Table 2 shows the physical activity of the participants in the study. Out of the 173 doctors, 21.4% had more than 3 days of vigorous physical activities like heavy lifting, digging, aerobics, or fast bicycling, while 15.0% had such activities for 1 to 3 days. On a daily basis, the average time they spent doing vigorous physical activities was 100.28±82.4 minutes. In terms of moderate physical activities like carrying light loads, bicycling at a regular pace, or doubles tennis, 17.3% did these for more than 3 days, and 24.3% did such activities for 1 to 3 days, with an average of 201.96±320.7 minutes spent on these activities per day. More than half of the samples (53.8%) spent more than 3 days walking for at least 10 minutes at a time, while 15.0% spent 1 to 3 days doing this activity, with an average of 328.73±223.8 minutes per day. On the other hand, the mean time spent sitting on a week day was 5.48±3.7 hours per day.

Based on the IPAQ data short form, 129 out of the 164 participants were having physical activity (74.6%). Among the 129 physically active participants, 28.9% were in the high category, 22.0% were in the moderate category, 23.7% were in the low category, while the remaining 25.4% had no physical activity. Among the 173 participants, the total exercise benefits/barriers scale had an average of 124.57±12.4, while exercise benefits scale had a mean of 91.37±11.6, and exercise barriers scales had an average of 36.80±7.3 (Table 3).

***Association between physical activity and perceived exercise benefits/barriers of the doctors***

Our findings showed that there was a significant association between physical activity and exercise benefits/barriers scale (Table 4). Based on the categorical score, the high category had the highest total exercise benefits/barriers scale and exercise benefits scale scores of 129.64±12.4 (p<0.001) and 95.70±11.3 (p=0.009), respectively. On the other hand, participants with no physical activity had the lowest total benefits/barriers scale score of 117.61±10.9, while participants with moderate physical activity had the lowest exercise benefits score of 87.84±9.1. Based on the exercise barriers scale, participants with no physical activity had the highest score of 42.11±6.5 (p<0.001), while individuals with moderate physical activity had the lowest score of 32.76±6.1.

***Relationship between demographic data and physical activity of the participants***

As shown in Table 5, there was no significant relationship between the demographic characteristics and the physical activity of the doctors. However, our findings presented that there is a significant positive correlation between BMI and total physical activity MET (r=0.354; p=0.032), which may imply that the higher the BMI, the longer the time spent on physical activities based on total physical activity MET (Table 6).

**Table 5: The correlation between demographic characteristics and physical activity.**

| Demographics | | Total | Physical activity | | P value |
|---|---|---|---|---|---|
| | | | No | Yes | |
| **Age** | | 173 | 30.77±5.5 | 30.23±6.3 | 0.613 |
| **BMI** | | 46 | 19.25±2.7 | 28.85±24.7 | 0.283 |
| **Work experience (month)** | | 146 | 60.00±63.8 | 64.69±73.0 | 0.731 |
| **Estimated number of patients seen daily** | | 160 | 16.23±25.5 | 20.16±40.3 | 0.563 |
| **Total** | | 173 | 44 (25.4%) | 129 (74.6%) | - |
| | | | N (%) | N (%) | |
| **Gender** | Male | 100 | 26 (26.0) | 74 (74.0) | 0.841 |
| | Female | 73 | 18 (24.7) | 55 (75.3) | |
| **Nationality** | Saudi | 133 | 34 (25.6) | 99 (74.4) | 0.943 |
| | Non-Saudi | 40 | 10 (25.0) | 30 (75.0) | |
| **Marital state** | Single | 94 | 28 (29.8) | 66 (70.2) | 0.304 |
| | Married | 76 | 16 (21.1) | 60 (78.9) | |
| | Divorced | 2 | 0 (0.0) | 2 (100.0) | |
| **Educational level** | Bachelor | 90 | 20 (22.2) | 70 (77.8) | 0.152 |
| | Diploma | 10 | 3 (30.0) | 7 (70.0) | |
| | Board | 53 | 19 (35.8) | 34 (64.2) | |
| | Master | 13 | 2 (15.4) | 11 (84.6) | |
| | PhD | 7 | 0 (0.0) | 7 (100.0) | |
| **Smoking** | Non-smoker | 102 | 21 (20.6) | 81 (79.4) | 0.194 |
| | Current smoker | 58 | 19 (32.8) | 39 (67.2) | |
| | Ex-smoker | 12 | 4 (33.3) | 8 (66.7) | |
| **Work position at KAH** | Consultant | 20 | 7 (35.0) | 13 (65.0) | 0.830 |
| | Specialist | 26 | 6 (23.1) | 20 (76.9) | |
| | Registrar | 20 | 6 (30.0) | 14 (70.0) | |
| | Resident | 80 | 20 (25.0) | 60 (75.0) | |
| | GP | 26 | 5 (19.2) | 21 (80.8) | |
| | Intern | 1 | 0 (0.0) | 1 (100.0) | |
| **Chronic health problems** | No | 158 | 41 (25.9) | 117 (74.1) | 0.613 |
| | Yes | 15 | 3 (20.0) | 12 (80.0) | |
| **Do you have specialty** | No | 50 | 11 (22.0) | 39 (78.0) | 0.508 |
| | Yes | 123 | 33 (26.8) | 90 (73.2) | |

Note: For comparing two group means Independent *t*-test was used. For comparing categorical variables Chi-Square Test was used.

**Table 6: The correlation between demographic characteristics and physical activity level.**

| Correlations | | Total physical activity MET | Exercise benefits scale | Exercise barriers scale |
|---|---|---|---|---|
| **Age** | r | -0.03 | -0.1 | -0.058 |
| | P value | 0.747 | 0.192 | 0.447 |
| | N | 120 | 173 | 173 |
| **BMI** | r | 0.354* | 0.157 | 0.051 |
| | P value | 0.032 | 0.297 | 0.736 |
| | N | 37 | 46 | 46 |
| **Work experience year** | r | 0.05 | -0.094 | -0.084 |
| | P value | 0.614 | 0.26 | 0.313 |
| | N | 103 | 146 | 146 |

***Association between demographic characteristics and perceived exercise benefits/barriers of the doctors***

In assessing the relationship between the doctors' demographic characteristics and their perceived exercise benefits/barriers (Table 7), it was exhibited by our findings that chronic health problem significantly affects the perceived exercise benefits of the doctors, with pof 0.037. Exercise benefits scale of doctors with chronic health problems had a higher average of 91.94±11.8

compared to those who had health problems with an average of 85.40±7.7. Furthermore, gender (p=0.029) and educational level (p=0.026) were demonstrated to have a significant effect on the perceived exercise barriers of the doctors. Perceived exercise barriers were significantly higher in male doctors with 37.84±7.6, compared to females with 35.38±6.7. Based on educational level, board passers had the highest perceived exercise barriers with an average of 39.30±8.1, followed by diploma holders with 37.20±9.1, then by bachelor's degree holders with 35.90±6.6, master's degree holders with 34.92±6.5, and PhD holders with 32.43±4.8. Our results also showed no significant association between the demographic features and the total exercise benefits/barriers scale of the study samples.

**Table 7: The association between demographic characteristics and perceived exercise benefits/barriers among the study population.**

| Demographics | | Total exercise benefits/barriers scale N=173 | Exercise benefits scale N=173 | Exercise barriers scale N=173 |
|---|---|---|---|---|
| **Gender** | Male | 124.18±10.2 | 92.02±10.7 | 37.84±7.6 |
| | Female | 125.10±15.0 | 90.48±12.8 | 35.38±6.7 |
| **P value** | | 0.634 | 0.390 | 0.029[b] |
| **Nationality** | Saudi | 124.90±13.2 | 91.98±12.2 | 37.08±7.4 |
| | Non-Saudi | 123.45±9.7 | 89.33±9.3 | 35.88±7.0 |
| **P value** | | 0.519 | 0.204 | 0.364 |
| **Marital state** | Single | 125.51±13.9 | 92.64±12.7 | 37.13±7.6 |
| | Married | 123.41±10.5 | 89.62±9.7 | 36.21±7.1 |
| | Divorced | 121.00±15.6 | 94.00±22.6 | 43.00±7.1 |
| **P value** | | 0.510 | 0.230 | 0.354 |
| **Educational level** | Bachelor | 126.44±13.2 | 92.34±11.3 | 35.90±6.6 |
| | Diploma | 120.30±20.8 | 87.50±19.4 | 37.20±9.1 |
| | Board | 122.74±10.4 | 92.04±11.3 | 39.30±8.1 |
| | Master | 124.46±7.8 | 89.38±8.0 | 34.92±6.5 |
| | PhD | 120.57±5.9 | 83.00±6.4 | 32.43±4.8 |
| **P value** | | 0.279 | 0.203 | 0.026[a] |
| **Smoking** | Non-Smoker | 125.24±11.9 | 91.20±11.4 | 35.96±7.0 |
| | Current Smoker | 124.14±14.4 | 92.28±12.5 | 38.14±8.2 |
| | Ex-Smoker | 121.58±6.1 | 89.08±8.4 | 37.50±5.3 |
| **P value** | | 0.595 | 0.660 | 0.189 |
| **Work position at KAH** | Consultant | 122.50±10.7 | 90.50±9.4 | 38.00±8.4 |
| | Specialist | 123.50±12.6 | 89.73±11.8 | 36.23±5.5 |
| | Registrar | 125.10±10.4 | 93.40±11.9 | 38.30±7.8 |
| | Resident | 123.84±11.2 | 90.81±10.9 | 36.98±7.4 |
| | GP | 128.04±17.1 | 93.08±14.5 | 35.04±7.6 |
| | Intern | 151.00±0.0 | 111.00±0.0 | 30.00±0.0 |
| **P value** | | 0.179 | 0.437 | 0.566 |
| **Chronic health problems** | No | 124.87±12.8 | 91.94±11.8 | 37.07±7.5 |
| | Yes | 121.40±6.8 | 85.40±7.7 | 34.00±5.1 |
| **P value** | | 0.304 | 0.037[b] | 0.122 |

[a]significant using One Way ANOVA @<0.05 level; [b]significant using Welch's t-test @<0.05 level.

## DISCUSSION

Throughout the years, physical activity has been proven to be beneficial physiologically and psychologically.[9] Researches have demonstrated the advantages of regular physical activity in preventing non-communicable diseases and promoting healthy lifestyle.[10,11] Some of the benefits of physical activity include the prevention of high blood pressure, stroke, cardiovascular diseases, diabetes mellitus, hypercholesterolemia, and obesity.[12–15] Moreover, few studies have shown that physical activity helps enhance psychological and cognitive function in adults.[16,17]

Based on our results, the prevalence of physicians who were physically active was approximately 74.6%. These physicians were found to do low to vigorous physical activities regularly. In other countries, lower findings

were exhibited. In 1991, a survey was carried out in Canada which reported that 30% of the participating physicians were physically active.[18] A much lower percentage of 16% physically active doctors among 616 employed in the Faculty of Medicine at Ain Shams University, Cairo, Egypt were reported.[19] In Bahrain, a study presented that only 29% of the physicians included in the survey were physically active.[20] In fact, some studies have stated that the general population was found to be more physically active than physicians.[21] Comparable to our findings, a recent study in Saudi Arabia found that 65.2% of physicians do moderate to vigorous physical activity, with only 34.8% of the physicians whom were inactive.[9] A study conducted in Australia also found that 70% of doctors and medical students were physically active, which was considered higher than 30% activity of the general public.[22] In 2012, a survey showed that physicians were more active that the average Americans and their level of activity increases as they grow older.[23] A high prevalence of physical inactivity (60%) among doctors was identified in our study, however, in contrast to the WHO estimates, this result is still relatively lower than the 80% prevalence of physical inactivity found in adult population of Saudi Arabia.[24]

Among the 129 doctors who reported to have low to high physical activity, it is notable to mention that 50.0% were in the moderate to high category, meanwhile only 23.7% were in the low category, which indicates that a high proportion of physicians working at KAH were willing to make time for physical activity or exercise.

Our findings also showed that perceived exercise barriers were significantly higher in male doctors compared to females. In 2009, AlQuaiz et al. reported that females were much less active than males,[7] which was consistent with other studies.[4,25] However, another research found that Saudi women were moderately more active than men.[26] Although no solid evidence has been found to explain the difference in behaviors between the two genders, it was previously reported that the lack of resources, lack of willpower, lack of social support, and lack of energy were the major barriers to adherence to physical activity. In Saudi Arabia, women reported lack of resources as the most common barrier to exercise, as there was limited access for women to join sports clubs, jogging trails, swimming pools or exercise facilities at work.[7,27,28] Moreover, educational attainment was found to be significantly affecting the perceived barriers to exercise among doctors.

Healthy lifestyle practices are expected from physicians since they are the first in line in the health care system. Counseling physical activity to patients are more likely to come from health care providers who are physically active as well.[29,30] Doctors with no or low physical activity are less likely to inspire patients to participate in physical activity in geographic areas with less active adult population.[31] Physically active physicians are communicating counseling on physical activity more often than physically inactive ones. Confidence among inactive doctors is important to enhance their physical activity, which will have a positive impression on the patients in particular and on the community in general.[9] Physicians believed that physical activity is important to their patients and to themselves.[18]

## CONCLUSION

Majority of the physicians included in this study were physically active (74.6%). A significant association between the level of physical activity and perceived benefits/barriers was shown in the findings. Gender, and educational level have been found to be significantly affecting the perceived barriers to exercise among physicians.

Being one of the countries with the highest prevalence of physical inactivity among adult population, Saudi Arabia has put a considerable attention to the lifestyle of its residents. An increase in physical activity among doctors have been found throughout the years, including the results of this study. However, there is still a need to encourage physicians to improve their physical activity which would bring significant effect on their perception on exercise and set them as better role models for physical activity among their patients and the community.

Further investigation on the specific benefits and barriers perceived by the physicians is needed subsequent studies in order to determine the specific factors that necessitate intervention not only at KAH but also throughout the country. Studies focusing on the behavioral aspects of the doctors during counseling and its effect on the patients' physical activity outcomes may also be evaluated in the future.

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