

## Body Mass Index and Physical Activity of Medical Students: A Cross-Sectional Study at the Arabian Gulf University

Salman Alzayani<sup>1\*</sup> and Randah R. Hamadeh<sup>1\*</sup>

<sup>1</sup>Department of Family and Community Medicine, College of Medicine and Medical Sciences, Arabian Gulf University, Kingdom of Bahrain.

### Authors' contributions

*This work was carried out in collaboration between both authors. Authors SA and RRH designed the study and wrote the protocol. Data collection and statistical analysis were conducted by author SA. The manuscript was written and approved by both authors.*

### Article Information

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### ABSTRACT

**Aims:** The aim of the study was to present the Arabian Gulf University (AGU) medical students physical activity and body mass index; and to provide recommendations for promoting physically active lifestyle among the students.

**Study Design and Place of Study:** A cross sectional study was conducted on medical students enrolled in the AGU in the Kingdom of Bahrain.

**Methodology:** A self-administered anonymous questionnaire was used, which included questions on demography, anthropometry (height and weight) and physical activity.

**Results:** Of the 535 pre-clerkship medical students (Years 1 to 4), 443 responded to the questionnaire thus resulting in a 82.8% response rate. The weight of the medical students in this study was mostly (57.5%) in the normal range (Body Mass Index from 18.5 to 24.9). Moreover, 13.3% were under weight, 18.5% over weight and 10.7% obese. More than half of the AGU medical students (54.3%) practiced physical activity during the week prior to interview. Among those who

\*Corresponding author: Email: [salmanhz@agu.edu.bh](mailto:salmanhz@agu.edu.bh);

practiced physical activity, the majority walked, ran and played team-sports.

**Conclusion:** The study showed statistically significant differences in BMI and physical activity between male and female students. Urgent interventions are needed to promote a physically active lifestyle among medical students to improve their wellbeing. Universities should consider having policies on the promotion of the students' wellbeing and healthy behavioral patterns, providing counseling services at the university and university housings for healthy lifestyle habits and weight control, including physical health in the students' health counseling services and in the medical curriculum. Further, they should establish a health club for the students in the university campus to practice physical activity and exercise.

*Keywords: Physical activity; body mass index; BMI; healthy lifestyle; medical students; intervention; policy.*

## 1. INTRODUCTION

Medical students are the future doctors and are expected to play an exemplary role in the community. Sedentary lifestyle is a common and serious problem among university students. Their work pressure is so high that much of their time and energy is likely to be utilized on their studies. On the other hand, smart phones and computers may provide alternatives of entertainment and reduce interest in exercise [1]. Moreover, physical inactivity, sedentary lifestyle and associated low level of physical fitness became more prevalent in the society. These lifestyle changes definitely carried negative consequences on health outcomes of the population [2,3]. Physically active lifestyles are associated with improved health and quality of life [4]. In Saudi Arabia, overweight and obesity prevalence is significantly high among Saudis adults, where males have a significantly higher prevalence of overweight, and females being more obese [5]. In a study conducted in Egypt, about half of the medical students were overweight and obese. The most important lifestyle factors responsible for obesity were longer time spent using computer, eating more during time of stress and snacking between meals [6]. The challenges in public health associated with sedentary lifestyle emphasize the necessity to prepare physicians to provide appropriate medical counseling. Moreover, the medical students' lifestyle and physical fitness suggest changes in medical education [7].

The Arabian Gulf University (AGU) is a regional university established in 1983 and based in the Kingdom of Bahrain. It has two colleges, the College of Medicine and Medical Sciences (CMMS) and the College of Graduate Studies. AGU accepts students of both genders from the Gulf Cooperation Council (GCC) countries (Bahrain, Saudi Arabia, Kuwait, Oman, UAE and

Qatar), where students are admitted based on their country's quota. Thus, AGU provides a unique opportunity to suggest guidelines to medical schools in the GCC countries [8]. The aim of the study was to determine the AGU medical students physical activity and body mass index and provide recommendations for promoting physically active lifestyle among students.

## 2. METHODS

### 2.1 Participants

A cross sectional study was conducted among AGU pre-clerkship medical students (Years 1 to 4), during May 2009. A census of all AGU Years 1 to 4 medical students (535) who were enrolled during the Academic Year 2008-2009, was obtained from the Admission and Registration Unit.

### 2.2 Instrument

A self administered anonymous questionnaire in the English language was used, which included questions on demography, anthropometry (height and weight) and physical activity. The questionnaire was abridged from the adult questionnaire of the United Arab Emirates Health and Lifestyle Survey 2000 [9], which was validated and field tested.

### 2.3 Data Collection

"The questionnaire was distributed to the students in the following manner: For Year 1 students, the questionnaires were distributed at the beginning of the Biostatistics class. As Years 2 to 4 students are divided into groups of 8-10 students in the tutorial sessions which are held twice per week, hence those students were given

the questionnaires by their respective tutors during their first session. The respective tutors were briefed about this process by a covering letter, which was kept along with the questionnaires in the tutorial boxes that contain the teaching materials. These boxes were collected from the medical education office by tutors before the tutorial sessions and returned back after the tutorial sessions. The completed questionnaires were put in sealed envelopes by the students and returned to the tutor who placed them in the tutorial boxes. The questionnaires were resent in the following week to the tutors for them to give students who were absent the day of data collection during the tutorial session. A covering letter was enclosed in the tutorial box to the respective tutors instructing them to distribute the questionnaires only to the students who were absent on the previous tutorial session” [10].

### 2.4 Data Analysis

Data entry and analysis were done using the Statistical Product and Service Solutions (SPSS), Version 17.0. Descriptive statistics and the chi-square test were applied when appropriate. Body Mass Index (BMI) is  $=(\text{kg})/(\text{height (m)})^2$ . BMI is a fairly reliable indicator of body fatness for most people. It is the most widely used diagnostic tool to identify weight problems within a population, usually whether individuals are underweight (below 18.5), normal (18.5–24.9), overweight (25.0–29.9) or obese (30.0 and above),  $\text{BMI}=\text{mass (kg)}/(\text{height (m)})^2$  [11].

### 3. RESULTS AND DISCUSSION

BMI showed that 57.5% of the students were of normal weight, 13.3% under weight, 18.5% over weight and 10.7% obese. The study showed different BMI patterns between males and females ( $P<0.001$ ) (Fig. 1). Normal weight and underweight were more prevalent among females as 52.4% of the male students were of normal weight compared to 59.6% of the female students, while only 3.2% of male students were underweight compared to 17.5% of the female students. However, over weight and obesity were more prevalent among males as 17.7% of were obese compared to 7.7% of females and 26.6% were overweight compared to 15.2% of females. Comparably, the prevalence of overweight and obesity were more common among male university students in Lebanon [13]. This is also in line with results reported among US students [14].

Fig. 2 shows that 54.3% of the medical students practiced physical activity during the week preceding the interview. However, a higher proportion of male students (67.5%) tended to practice physical activity than female (49.0%) students ( $P< 0.001$ ).

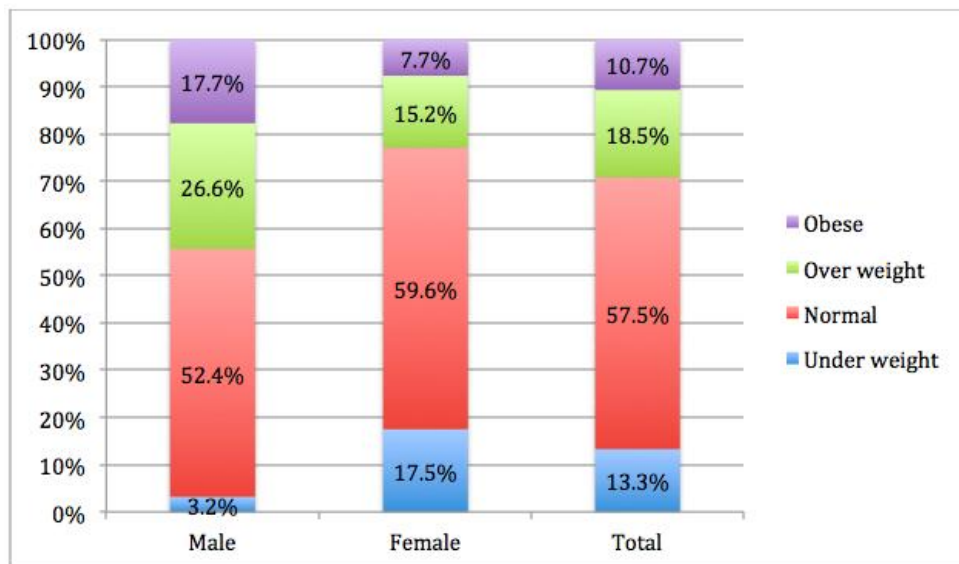


Fig. 1. Body mass index (BMI) of medical students by gender

Out of those who practiced physical activity, half practiced for 1-2 days, 31% for 3-4 days, 13% for 5-6 days and only 5% daily. However, there were no statistically significant differences between male and female students in the number of days/week of practicing physical activity ( $P=.47$ ). Higher percentages of Years 3 (60%) and 4 (56.6%) students practiced physical activity than Years 1 (55%) and 2 (46.7%) ( $P=.27$ ) (Fig. 3).

Among those who practiced physical activity, the majority walked, ran and played team-sports. More male students, practiced team-sport rather than walking and running, while it was the opposite among the female students as well as physical art i.e. aerobics and dancing ( $P<.001$ ) (Fig. 4). A similar finding was reported [1] where about half of the medical students practiced physical exercise, 52% of the male and 38% of the female students.

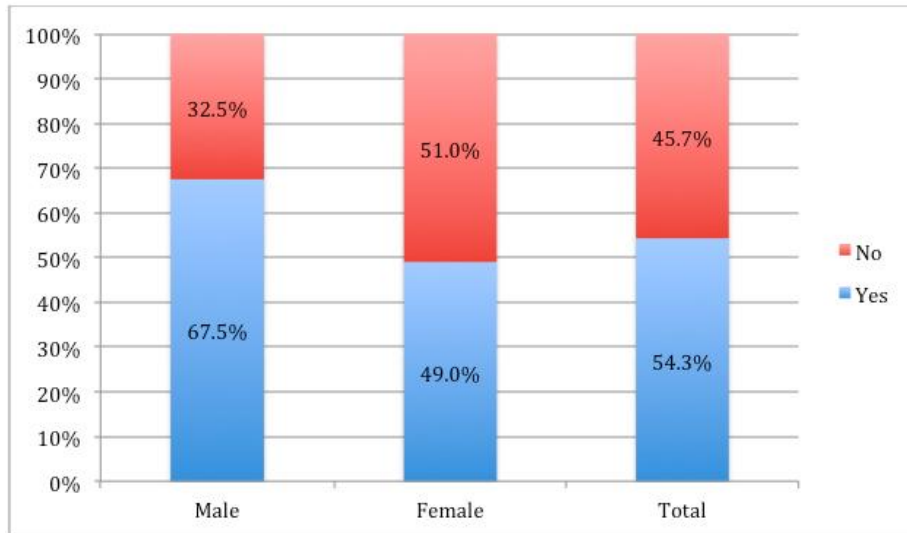


Fig. 2. Physical activity of medical students during the last week by gender

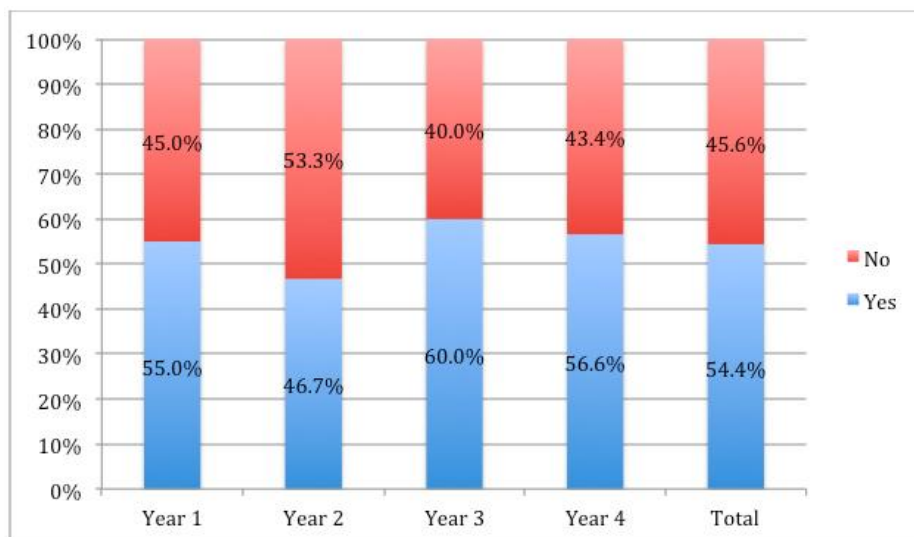


Fig. 3. Physical activity of medical students during the last week by medical year

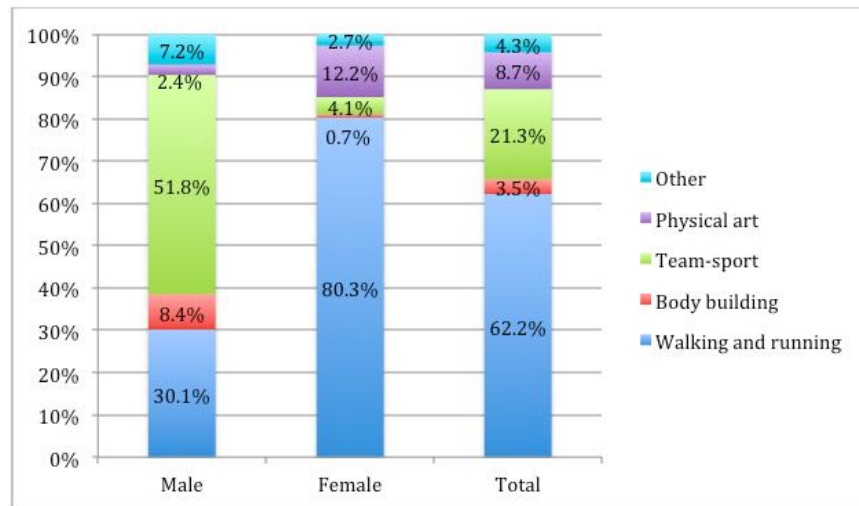


Fig. 4. Type of physical activity of medical students during the last week by gender

#### 4. CONCLUSION AND RECOMMENDATIONS

The study showed statistically significant differences in BMI and physical activity between male and female students. Urgent interventions are needed to promote physically active lifestyle among medical students to improve their wellbeing. Universities in GCC countries should consider having policies on the promotion of the students' wellbeing and healthy behavioral patterns. They also should provide counseling services at the university and university housings for healthy lifestyle habits and weight control, include physical health in the students' health counseling services and in the medical curriculum. Further, they need to consider establishing a health club for the students in the university campus to practice physical activity and exercise and encourage the active participation of the students in the health promotion activities in the GCC countries.

#### ETHICAL CONSIDERATIONS AND PRIVACY OF PARTICIPANTS

The Academic Committee of the Masters of Science in Health Policy and Population Studies program approved the research protocol. Study participation was on a voluntary basis and participants were assured of the confidentiality of the study by having the questionnaire anonymous and keeping the completed ones in sealed envelopes.

#### COMPETING INTERESTS

Authors have declared that no competing interests exist.

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