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The Effects of Elective Sports Medicine Internship on Physical Activity Counselling Attitude of Medical Students

Seçmeli Spor Hekimliği Stajının Tıp Fakültesi Öğrencilerinde Fiziksel Aktivite Danışmanlığı Tutumuna Etkisi

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ABSTRACT

Objective: The increase in physical activity (PA) and exercise prescription is crucial in the prevention of chronic diseases. However, it is well known that the lack of physicians' knowledge is an obstacle toward promoting PA. In this present study, medical students' (MS) knowledge and perception regarding PA and exercise prescription were evaluated.

Materials and Methods: After a two-week elective internship program in sports medicine, a total of 65.7% of the 216 fifth-year MS (n=142; mean age, 24.2 years), were included in this study. Students completed several questionnaire forms regarding their knowledge of PA counseling and sports medicine, International Physical Activity Questionnaire (IPAQ) form and Short Form Health Survey (SF-36).

Results: During five years of medical education, more than two-thirds of the students (69.1%) had neither any discussion regarding PA counselling, nor exercise prescription. MS stated that after two weeks of the educational program, they felt sufficient knowledge to advise on PA and the rate increased to 76.8% from one-fourth at the beginning ($p<0.001$). Nearly all of the students (93.7%) affirmed that they believed in the benefits of PA counselling at the end of the educational program. MS who were more prone to PA counselling had significantly higher IPAQ and SF-36 scores ($p=0.006$ and $p=0.007$, respectively).

Conclusion: Our results indicated that lack of knowledge is a barrier in exercise counselling for MS as future physicians. Along with the aforementioned, an important aspect of counseling PA to patients is a higher level of PA behavior among MS.

Keywords: Physical activity; exercise, sports medicine; education; curriculum

ÖZ

Amaç: Fiziksel aktiviteye katılım ve hekim tarafından egzersiz reçetelenmesi kronik hastalıklardan korunmada önemli rol oynasa da, hekimlerin bilgi eksikliği önemli bir sorun olarak görülmektedir. Bu çalışmada tıp fakültesi öğrencilerinin fiziksel aktivite ve egzersiz reçetelendirilmesi hakkındaki bilinç düzeyleri ve seçmeli spor hekimliği stajı sonrası davranış yönelimleri değerlendirildi.

Gereç ve Yöntemler: Seçmeli spor hekimliği stajı alan 216 dönem 5 öğrencisinin %65.7'si (n=142; ort. yaş, 24.2) çalışmaya katıldı ve öğrencilere fiziksel aktivite danışmanlığı ile spor hekimliği branşı hakkında bilgi durumlarını sorgulayan anket formu ile Uluslararası Fiziksel Aktivite Değerlendirme Anketi (IPAQ) ve Kısa Form-36 (SF-36) anket formları doldurtuldu.

Bulgular: Öğrencilerin üçte ikisi (%69.1) geride kalan beş yıllık tıp fakültesi eğitimleri süresince fiziksel aktivite danışmanlığı ya da egzersiz reçetelendirmesi hakkında herhangi bir eğitim almadıklarını belirtti. İki haftalık spor hekimliği stajı sonrası kendisini fiziksel aktivite danışmanlığı yapabilecek düzeyde yeterli hisseden öğrencilerin sayısı başlangıçta dörtte birden %76.8'e yükseldi ($p<0.001$). Staj sonunda öğrencilerin neredeyse tama yakını (93.7%) fiziksel aktivite danışmanlığının faydalarına inandığını belirtti. Daha yüksek IPAQ ve SF-36 skorları olan öğrencilerin fiziksel aktivite danışmanlığına daha yatkın olduğu gözlendi (sırasıyla $p=0.006$ ve $p=0.007$).

Sonuç: Bu çalışmanın sonuçları hekim adayı olan tıp fakültesi öğrencilerinin fiziksel aktivite danışmanlığı hakkındaki yetersiz eğitimlerinin gelecekte koruyucu hekimlik adına yapacakları tıbbi uygulamalar için en önemli engel olduğunu engel olduğunu göstermektedir. Egzersiz alışkanlığı olan öğrencilerin fiziksel aktivite danışmanlığına daha yatkın olmaları gözlemi tıp fakültesi öğrencilerinin düzenli fiziksel aktiviteye yönlendirilmelerinin toplum sağlığı açısından önemli olacağını ortaya koymaktadır.

Anahtar Sözcükler: Fiziksel aktivite, egzersiz, spor hekimliği, eğitim, program içeriği

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INTRODUCTION

Around the world, the burden of chronic diseases is growing rapidly every year, causing millions of deaths and estimating trillions of dollars in the annual cost of medical services (1). Physical activity (PA) has been associated with a decrease in all-cause mortality, even after adjusting for other relevant risk factors (2). In the prevention of chronic diseases such as diabetes, obesity, stroke, hypertension, cardiovascular diseases, dyslipidemia, osteoporosis, depression, dementia, and even cancer; PA and exercise are now considered as an important intervention (3-6).

Physicians can play an effective role to fight against the pandemic of physical inactivity and they are being guided to promote PA amongst patients. Evidences suggest that intensive and frequent exercise counselling by primary health care can increase patients' PA habits (7,8). The increase in PA and exercise prescription appear to be a significant solution in the prevention and treatment of the aforementioned diseases. On the other hand, lack of physicians' knowledge is a well-defined barrier that keeps from prescribing exercise to their patients (9). The present paper was aimed to assess the knowledge level and perspective of medical students (MS) regarding PA and exercise prescription. It was hypothesized that after the two weeks of sports medicine education program, MS would improve their knowledge and experience about PA counselling and its effects on the treatment of chronic diseases. Furthermore, we asked if there is any relation between the PA levels of MS and their propensity for exercise counselling.

MATERIAL and METHODS

Study Design

A prospective cohort study was conducted on MS during a sports medicine internship program in the fifth-year of their six-year medical faculty education. Hacettepe University Ethics Committee (Decision number: GO 17/528) approved the study.

Participants

Of a total of 216 MS who underwent a two-week sports medicine elective internship program, 142 (response rate: 65.7%) were included in the study, all giving their informed consent with the returned questionnaire forms. Data were obtained by questionnaires between September 2014 and May 2016. The educational program for two weeks contained theoretical and practical classes related to sports injuries, exercise physiology, and exercise prescription for chronic diseases. The students were informed about the study at the first day of the internship program. They were asked to fill out questionnaires prior to and a month after the elective internship program. The questionnaire form targeted MS' knowledge about exercise prescription and confidence in counselling patients about PA.

Questions covered age, weight, height, smoking habit, knowledge about sports medicine issues and the effects of exercise on chronic diseases. The questionnaire assessed perception about the importance of PA in the prevention and management of chronic diseases, and their previous education about exercise counselling. At the beginning of the education program, they were also asked to fill the International Physical Activity Questionnaire-Short Form (IPAQ-SF) and the 36-item Short Form Health Survey (SF-36) in order to evaluate their PA status. We aimed to obtain internationally comparable data on health-related PA as lower (<600 MET-min/wk), sufficient (600-1500 MET-min/wk) and higher PA (>1500 MET-min/wk). SF-36 consists of eight scaled scores (with 36 items), which are the weighted sums of the questions in their section; namely vitality, physical functioning, bodily pain, general health perception, mental health, physical, emotional and social role functioning.

Data analysis

Statistical analyses were completed using the SPSS software version 21 (SPSS, Chicago, IL, USA). The variables were examined using visual (histograms, probability plots) and analytical methods (Kolmogorov-Simirnov/ShapiroWilk's test) to determine whether or not they were normally distrubuted. Descriptive analyses were showed using means and standart deviations for normally distrubuted variables, and using medians and interquartile range (IQR) for non-normally distrubuted and ordinal variables. The Chi-square test or Fisher's exact test, where appropriate, and McNemar's test were used to compare proportions in different groups. Mann-Whitney U test was used to compare non-normally distributed variables. The $p<0.05$ level was considered to reveal a statistically significant result.

RESULTS

The mean age of the participants were 24.2 years (range: 22-31 years; SD: 1.22). Of the participants; 59.1% were males (n=84) and 40.9% were females (n=58). Anthropometric and other baseline data of the participating students are presented in Table 1. None of the subjects had health problems affecting their ability to exercise. Only 7.7% (n=11) of the participants reported using any medicine regularly and 14.8% (n=21) were smokers.

Table 1. Anthropometric data of the participants

	Mean	SD	Min	Max
Age (years)	24.2	1.2	22	31
Height (cm)	173.2	8.6	153	191
Weight (kg)	70.1	14.1	45	120
BMI (kg/m^2)	23.1	3.3	17.0	34.8

BMI: body mass index, SD: standart deviation

Eighty seven percent of MS stated that they didn't know about the sports medicine branch as a residency program before they started their education at the medical faculty. Gender or being physically active were not related with their awareness of sports medicine discipline (p=0.800 and p=0.425 respectively). MS were also asked for their prior opinion about five main fields of occupation for sports medicine physicians with an open-ended question. After the two-week sports medicine education program, the viewpoint of MS about the primary duties of sports medicine physicians improved for exercise prescription (53.5% to 65.5%), consulting exercise for different groups (children, elderly, pregnants, etc.) (50.0% to 61.9%) and preparticipation examination (37.3% to 50.7%).

More than two-thirds of the students (69.1%, n=96) reported not to have any discussion about PA counselling or exercise prescription before attending the elective sports medicine internship program. Despite the lack of previous education, more than half of the respondents (58.4%, n=83) declared in the open-ended question that

PA could be useful for the treatment of diabetes mellitus before starting the internship program. The rate of students concluding that exercise prescription would be highly important for the treatment of diabetes mellitus in their future practice increased during the two-week program, from 58.4% to 92.9%. ($p<0.001$) (Figure 1). Almost three-fourth of the students (75.3%, n=107) were feeling not capable enough to counsel patients about PA at the beginning of the program, while 88% of them (n=125) announced positive attitudes for exercise counselling after their graduation. MS stated that after two weeks of the educational program, they felt sufficient knowledge to advise on PA, increasing from one-fourth at the beginning to 76.8% ($p<0.001$) in this respect (Figure 2). By the end of the elective sports medicine internship program, nearly all of the students (93.7%, n=133) decleared that they believed in the benefits of PA counselling and goals, to apply in their future practice.

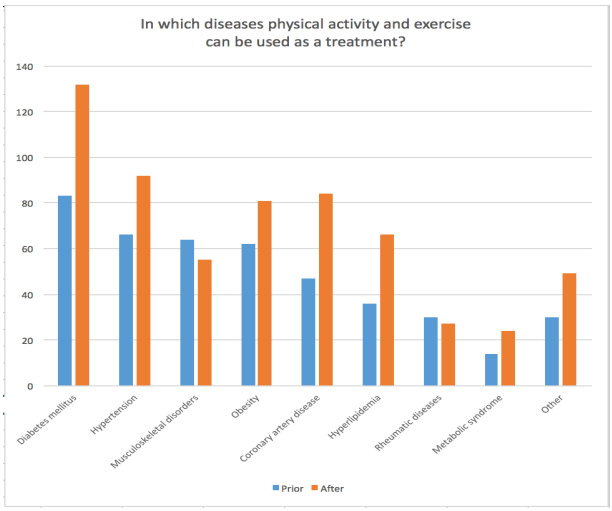

Figure 1. Responses of medical trainees (n=142) for the "In which diseases physical activity and exercise can be used as a treatment?" question

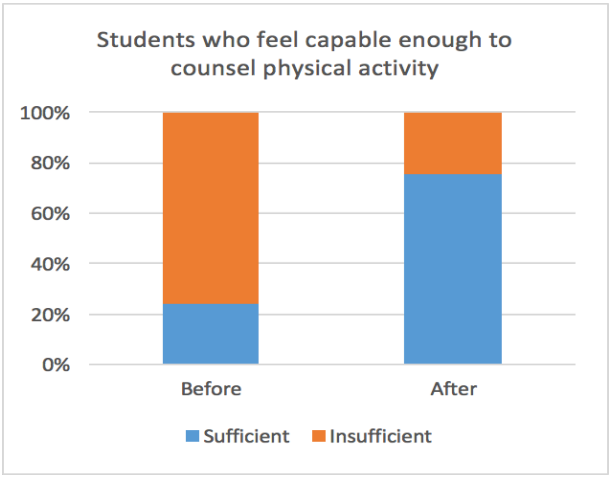

Figure 2. The rate of the students' self confidence for physical activity counselling

The results of the IPAQ short form revealed that participants' median total MET/min score was 1712.3 (IQR: 2384.3) (for females 1399.5, IQR: 2242.1), for males 1900.5, IQR: 2254.5) per week. Gender or BMI were not related with IPAQ scores among medical trainees ($p=0.118$ and $p=0.883$ respectively). According to the results of IPAQ; 53.1% of the students reported spending more than 1500 MET mins/wk in total, while only 17.7% of them reported below 500 MET mins/wk. More than half of the weekly activity reported by the students corresponded to walking, with 1268.3 MET mins/wk. Vigorous PA caused an energy expenditure of 782.7 MET mins/wk, whereas moderate activity was reported as low as 370.2 MET mins/wk.

The Short Form Health Survey (SF-36) was evaluated via two key scores, mental component summary and physical component summary. Our participants scored (on a scale of 0 to 100) 44.0 from the mental component, and 55.0 from the physical one. Regarding the questionnaire, MS who had both higher IPAQ and SF-36 scores, were significantly more prone for PA counselling ($p=0.006$ and $p=0.007$, respectively) (Figure 3).

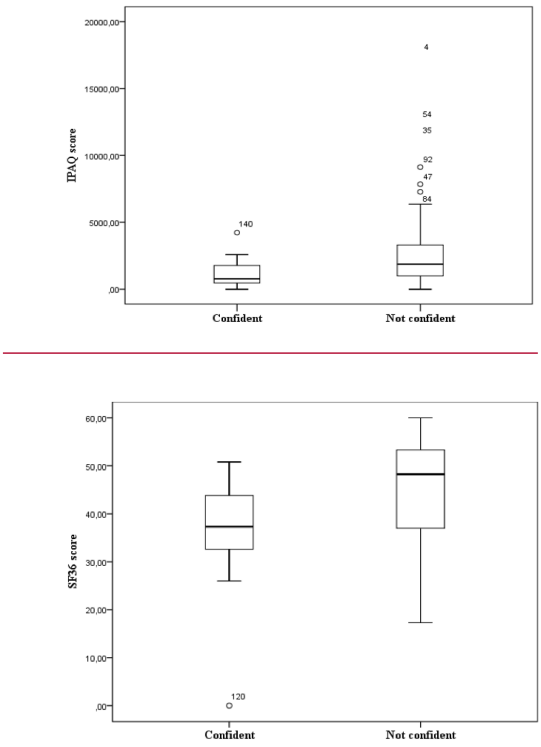

Figure 3. The relation between IPAQ and SF-36 scores and medical students' confidence in counselling patients about physical activity

DISCUSSION

We present a study where the knowledge and practices of medical trainees regarding the role of PA in the management of chronic diseases was obtained at their fifth year of a six years medical education, and to assess whether two weeks of sports medicine internship program would affect their exercise counselling behaviour in the future. The main finding of this study was MS' views about the significance of PA in the managing of chronic diseases and their confidence in the promotion of PA among patients, which increased after the two weeks program. Therefore, our findings suggest that therotical and practical sports medicine lectures should be included in the undergraduate medical curriculum.

It is well known that the global obesity pandemic is currently the fourth leading independent risk factor for death caused by non-communicable chronic diseases, and is associated with physical inactivity (10). Sedentary behaviour has reached alarming levels among the general population and a third of the planet's population does not meet the recommended level of PA, causing substantial health and economic burdens (11). Therefore, regular PA behaviour is a cornerstone in healthy lifestyle and disease prevention. Exercises should be reviewed as a serious form of treatment, equivalent to drugs, and must be thought out for each patient. Doctors are being guided to promote PA amongst patients (10-12).

In spite of a great evidence base for demonstrating the health benefits of regular PA, there are limited number of physicians who include PA counselling in their routine, and the opportunity to raise awareness about its benefits are usually missed (12,13). Only one-third of adults were reported to counsel exercise at their last medical visit (13,14). Besides patient and work environment related factors, inadequate medical training for exercise medicine has been cited as another important barrier for advising patients to increase PA (15,16). Thus, primary health care education is a central element of the strategy in order to battle non-communicable diseases, and to increase society's PA levels. Counselling patients in general practice on exercise was shown to be effective in increasing PA and improving quality of life over 12 months (16).

However, we noticed that medical trainees were not educated enough for the benefits of exercise counselling to patients having chronic diseases. Two-thirds of the students reported that they had neither lectured about PA counselling nor exercise prescription for the previous five years of their education. This should be the main point that health professionals who deal with the medical curriculum must focus on. MS have to be able to assess a patient's level for starting or increasing exercise safely, along with providing guidance regarding frequency, intensity, time, and type of activity necessary to achieve maximal health benefits (17,18). We found that students were certain about the effectiveness of preventive counselling and felt more comfortable providing detailed advice about PA in managing chronic diseases after the two-weeks of elective sports medicine teaching. In accordance with our findings, similar results were reported for first- and second-year undergraduate MS in England (19). Our study also revealed that MS were more

likely to counsel exercise especially for patients with diabetes mellitus.

Promoting personal exercise behaviour in MS has been shown to cause a more positive perception of their ability to deliver effective PA promotion in future practice (20,21). In accordance with our findings, doctors' self-reported PA behaviours has been shown to be associated with their propensity to counsel patients regarding PA (22-26).

Despite reports that claim higher personal PA levels among MS than those of age-matched peers in the general population, physicians do not meet the minimum recommendations for an active life (27-29). In a study of Patra et al., two-thirds of the doctors in the mean age of 42 years were described being inactive, and physicians who were encouraged to perform PA and used exercise equipment at home and neighbourhood facilities for PA, were more likely to perform moderate PA in comparison with their colleagues (22). Furthermore, according to the same study, physicians who considered that their own well-being influenced advice practices, who consulted less than 30 patients/day, and who stated participation in sports activities previously, were more prone to ask and counsel their patients on PA in comparison with their colleagues. Therefore, we asked whether physical activity levels of students affects their behaviour for exercise counselling, and results supported data about younger MS with higher IPAQ scores being more disposed to provide preventive counselling to their patients in the future.

Furthermore, MS who performed strenuous PA were shown to be more prone to perceive the importance of exercise counseling in future clinical practice (30,31). Therefore, we point out that lectures of exercise medicine should be included in all stages of medical education, and medical personnel should gain life-long exercise habits. Medical schools can be a suitable place to provide PA trainings for future physicians. Strategies to increase PA levels of students should be considered as a part of medical education and a strategy to increase exercise prescription rates among future physicians (27,32).

Stanford et al. reported that overweight or obese physicians and MS were not more confident than those with normal BMI, to express confidence in regard to exercise counselling (30). However, our results revealed no significant relationship between BMI and PA counselling qualification status before and after the survey. We believe that normal BMI is an important factor to influence patients' attitude toward PA to apply prescribed exercise, since doctors may be seen as powerful role models for their patients. Majority of undergraduate MS were reported to have normal BMI and adequate practice of PA in India, which is consistent with our population (76% and 69%, respectively) (33). Similarly, low levels of PA among female student respondents with higher BMI were reported (34). In contrast, we found no significant difference of PA levels among male and female students.

Finally, we evaluated students' perceptions about the main fields of occupation for sports medicine doctors, a subject that was not assessed to date. One of the most acknowledged roles of sports medicine is treatment and prevention of sports-related injuries and health problems in competitive or recreational athletes (35). However, this area is very wide, and includes clinical practice and research in many areas related to PA regarding prevention and treatment of chronic diseases. As we expected, working as a team physician or dealing with sports injuries were the most given answers by our trainees. After the two weeks of sports medicine education program, the viewpoint of MS changed especially in favour of exercise prescription in chronic diseases and consulting exercise for different groups of patients. This also reflects the previous inadequate knowledge of MS about PA counselling for chronic diseases, and could be improved with well planned sports medicine education.

Our study had several limitations, which are the following: the population contained Turkish MS from a single university hospital. The possibility of self-report biases was another main limitation, despite we used externally validated IPAQ, the most commonly suggested tool for the evaluation of self reported level of PA. Future studies of MS

from different universities with larger participants might show a stronger association between PA level of MS and exercise counselling attitudes. Furthermore, due to inconsistent opportunities, trainees' postgraduate counselling practices could not be assessed.

CONCLUSION

Our findings suggest that MS were not trained to give PA advice to patients about the benefits of exercise or exercise prescription. Therefore, undergraduate medical school education should focus on health promotion in their students, in order to improve public health behaviours in the future. We are in need to change medical school curricula to increase knowledge amongst future physicians of the benefits of PA in health promotion and disease prevention. Moreover, it is essential to implement effective continuing medical education programs in order to increase healthcare providers' knowledge and skills in sports medicine. Additionally, the results of our study point to a greater level of PA behaviour in MS, which is important for physicians to perform PA counselling in the future. Thus, personal exercise behaviour is suggested for physicians as a lifelong habit.

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