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CONSUMPTION OF ANABOLIC-ANDROGENIC STEROIDS AMONG ISFAHAN UNIVERSITY STUDENTS: PREVALENCE AND KNOWLEDGE ABOUT SIDE EFFECTS

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SUMMARY

The aim of this study was to examine the incidence of anabolic-androgenic steroid (AS) drugs use by Isfahan University students and knowledge level about such drugs and their side effects. Target population included all male students of the University. A confidential self-report questionnaire was administered to 310 male students aged 18 to 25 (23.3 ± 1.2 yr) attending the bachelor and master grades. The numbers of students reporting AS use, and differences between users' and nonusers' knowledge and attitudes about these drugs were assessed. The answer rate was 81.3% (n=252/310 eligible). Results indicated that 8.3% (n=21) of all students had already used steroids at least once, and 5.6% (n=14) were currently using them. The main reason for using these drugs was to increase muscular mass (43.6%) and strength (19.8%). Only 27.6% stated that friends, athletic magazines, the internet, coaches or athletic trainers, and parents were the primary sources of information. The results of this study suggest widespread use of AS drugs as well as low level of user's knowledge, or false views about side effects. This study also highlights the need to take steps in educating people and introducing preventive programs.

Key words: Androgenic steroids, drug abuse, risky behavior, students, youth

ÖZET

İSFAHAN ÜNİVERSİTESİ ÖĞRENCİLERİNDE ANABOLİK-ANDROJENİK STEROİD KULLANIMI: PREVALANS VE YAN ETKİ BİLGİ DÜZEYLERİ

Bu çalışmanın amacı İsfahan Üniversitesi öğrencilerinin anabolik-androjenik ilaç kullanım oranını saptamak ve bu ilaçların yan etkileri hakkındaki bilgi düzeylerini belirlemektir. Araştırmanın örneklemini tüm

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erkek Üniversite öğrencileri oluşturdu. İçeriği gizli tutulacak bir sorgu anketi yaşları 18 ile 25 arasında (23.3 ± 1.2 yaş) olan ve lisans ve yüksek lisans öğrenimi gören 310 erkek öğrenciye uygulandı. AS kullanan öğrenci sayıları ve bunlarla kullanıcı olmayanların ilaçlara ve yan etkilerine ilişkin bilgi düzeyleri karşılaştırıldı. Anketin geri dönüş oranı % 81.3 (n=252/310) oldu. Sonuçlar tüm öğrencilerin % 8.3'ünün (n=21) daha önce en az bir kez AS kullandığını ve % 5.6'sının (n=14) halen kullanıcı olduklarını ortaya koydu. İlaç kullanımının ana nedenleri kas kitlesini (% 43.6) ve gücünü (% 19.8%) arttırmaktı. Sadece % 27.6'lık bir kısım bilgilenme kaynaklarının arkadaşlar, spor dergileri, internet, antrenörler ve ebeveynler olduğunu ifade etti. Bu çalışmanın sonuçları AS ilaçlarının yaygın kullanımına ve kullanıcıların ilaçlar ve yan etkileri hakkındaki düşük bilgi düzeylerine işaret etmektedir. Aynı zamanda bireylerin eğitilmesi ve önleyici programlara işlev kazandırılmasının gerekliliğini vurgulamaktadır.

Anahtar sözcükler: *Androjenik steroidler, yasaklı madde kullanımı, riskli davranış, öğrenci, gençlik*

INTRODUCTION

It is reported that using various ergogenic substances to increase performance is a major worldwide problem, and that interest in using these substances is increasingly growing (4,5,9,24,25). Their consumption is widespread among athletes of different levels, and even non-athletes. Amateur athletes, non-athletes and even students (1, 8,16,18,22) use these components. These drugs mainly consist of anabolic-steroids, stimulants, narcotics, alcoholic beverages, human growth hormone, and others (18).

Young people's and adolescents' attention is drawn to the body size and mass increasing effects. However, taking these drugs leads to nutritional disorders. Young men intend to have a muscular body and media advertisements make the case worse by inferring that the ideal male body has to be muscular (13,21). Some adolescents believe that boys with larger muscles are more attractive (16).

Dissatisfaction of the body image and desire to change it are the main reasons to use drugs like anabolic–steroids (13,21). The target is to increase muscle mass and to improve body shape (8,10,16). Published statistics by reliable International Olympic Committee laboratories reveal that steroids are the most commonly diagnosed substances among all positive doping samples. Several harmful effects of these drugs have been proved (3,9,11,19,23).

Numerous studies have investigated the prevalence of anabolic steroid usage among different populations. Avery et al. (1) reported that 27% of boys and girls in USA guidance schools use these drugs. Nilsson et al. (16) studied a total of 5827 students aged 16 to 17 years old in a Swedish province. They found that 3.6% of the boys and 2.8% of the girls were using these drugs. Irving et al. (8), studying steroid consumption in 4746 guidance and high school students reported prevalences of 5.4% and 3.9% for males and females, respectively. Different studies have reported steroid consumption in high schools in the range of 1.4-12% and 0.5-2.9% among boys and girls, respectively (13,14,22). About two-thirds of the users had started at the age of 17 (22). Green et al. (7) reported a prevalence of 1.1% among university athletes.

Different researchers have also evaluated users' knowledge about these drugs, their effects and side effects. They have reported that athletes had no adequate information about and paid little attention to the matter (6,12,14,15,20).

Widespread steroid usage and the presence of such a serious threat for the youth's health have forced researchers to study the prevalence of drug usage and the knowledge level about these drugs and their side effects. This study aims to reflect a clear picture of AS drug usage at the University of Isfahan, of the problems associated with, and to propose solutions for a better future.

MATERIAL AND METHODS

The sample of the investigation were 310 male students aged between 18 and 25 (23.3 ± 1.2 yrs) at the bachelor or master of arts academic level enrolled in 2004-2005 at the University of Isfahan, Iran. Of these, a total of 252 students (81.3%) participated in the study.

Before administering the survey, students were informed that participation was totally voluntary and that all responses were confidential. Students did not write their names on the surveys, and anonymity was guaranteed. All participants were informed about the purpose of the study. Coordinators administered the surveys to all students who were present in the physical education class at date.

The questionnaire included 30 items, selected from Randall et al. (22) and Nilsson et al. (17). The first section aimed general information regarding age, academic level, bodybuilding, championship experience. The second section evaluated participation in sports and recreational activities. The third section of the survey consisted of a series of

questions that assessed AS drug usage, its prevalence, knowledge and attitudes about AS, and intent to use AS in the future. Pilot surveys were conducted to ensure that this instrument could be used by students without difficulty. It was made of 11 questions for getting basic information, 10 questions about knowledge, five questions about attitude, and four questions about prevalence. The average time to fill each questionnaire was determined to be 7-10 minutes.

The encoded data were analyzed using descriptive and analytical statistics. Statistical significance level was set at $p<0.05$.

RESULTS

Table 1 gives the distribution of bodybuilding experience. Of the 40 athletes with championship competition experience, 12 (30%) were from martial sports, 10 (25%) from football, eight (20%) from wrestling, seven (17.5%) from bodybuilding, and three (7.5%) from various sports. Table 2 presents the consumption distribution of various AS drugs.

Table 1. Distribution of bodybuilding experience

Involvement	Frequency	Percentage
No experience	86	34.1
Less than 6 months	84	33.3
6 to 12 months	23	9.1
1 to 2 years	34	13.5
2 to 4 years	14	5.6
More than 4 years	11	4.4
Total	252	100.0

Table 2. Consumption distribution of various steroid drugs

Type of drug	Frequency	Percentage
Methone	17	19.5
Oxymetholone	15	17.2
Nandrolone	14	16.1
Testosterone	14	16.1
Dianabol	8	9.2
Winsterole	7	8.0
Other drugs	12	13.8
Total	87	100.0

Table 3 depicts the expected effect for AS drug usage. Table 4 provides comparison of knowledge, prevalence and attitude scores according to academic level. Athletes with championship experience

displayed higher knowledge (15.2 vs. 12.3, $p<0.01$) and prevalence (27.5 vs. 4.7, $p<0.001$) scores, when compared with non-experienced ones.

Table 3. Expected effect for steroid drug usage.

Reason of consumption	Frequency	Percentage
Increasing muscle mass	110	43.6
Increasing strength	50	19.8
Increasing endurance	8	3.2
Increasing speed	4	1.6
I don't know	80	31.8
Total	252	100.0

Table 4. Comparison of knowledge, prevalence and attitude scores according to academic level

Level	Knowledge	Prevalence	Attitude
Bachelor	13.7	8.18	5.8
Master of Arts	13.9	8.45	6.0
p	0.104	0.081	0.072

This research also revealed that 133 students (53%) had at least heard about one of the AS drugs. The major sources of information about these drugs were friends (43%), athletic magazines (41%), the internet (30%), the coach or athletic trainer (12%), and parents (12%). A total of 21 students (8.3%) confessed using at least one AS drug during their lives and 14 students (5.6%) added that they were still using them. Of the 21 users, 15 (71.4%) believed that limited use or usage with anti-toxic drugs meant no harm for the body, two students (9.5%) told that these drugs were harmless and four (19.1%) confessed taking drugs in spite of adverse effect knowledge. About 47% of the users prescribed AS drugs to others, and 63% were intending to use them in the future.

Of the total sample, 118 (47%) had some friends who used AS drugs, and 131 (52%) told that they had observed negative effects of these drugs in users. About 103 (41%) thought that professionals were using these drugs, and 140 (56%) believed that they were really improving their performance. A total of 131 students (52%) said that if they wanted to use these drugs, it was possible to provide them. Of the students, 84 (33%) believed that usage was needed for success, and 65 (26%) thought that athletes should be allowed to use these drugs. Interestingly, 147 students (58%) said that if they knew a drug or supplement which would not be harmful, they would use it.

DISCUSSION

The findings of this research revealed that the use of AS drugs among young people is a real dilemma. The rate of 8.3% drug users among Isfahan University students is a little higher compared with some previous studies. Green et al. (7) a rate of 1.1% among students. Numerous researches revealed that the rate of AS drug use is significantly more common among athletes than non-athletes (2,8). Of course, one should also consider at this point that the prevalence of these drugs among the common adolescent and young male population has been reported between 1.4-12% (7,22). When measured among competitive and professional athletes, this amount even reaches to 78% (4). This rate may even be higher, for some users prefer not to confess.

As to the widely used drugs, there is little difference in comparison with studies done in other countries. Some drugs such as clenbutenol, DHEA, metandrestendiol, masterolone and trenbolone are less common or absent, probably for their lower availability on the local market.

Though the average reported score of knowledge in this research is 13.8, if only users are considered, it is clear that knowledge level is very low, and accompanied with wrong beliefs that have no scientific support. This fact is not restricted to the present research, as Kutscher et al. (12) faced similar beliefs. They stressed that bodybuilders consider athletes who have used these drugs for years as the main specialists, and that they do not pay enough attention to the problem.

In spite of participants' low knowledge level about side effects and dangers of the drugs, their correct answering rate about reasons for drug usage supports the view that most of those who know about these drugs are aware of the positive effects on tissue anabolism. This finding is similar with other researches in the field (8,10,16,18). The difference between the 44% who knew about AS drugs and the 8.3% who were actual users may reveal that some students do not use these drugs, considering them to be harmful. The rate (52%) of participants who observed negative effects of these drugs on users supports this view.

Education level seems to have no effect on changing peoples' prevalence, knowledge and attitude scores. Considering also the observation that 33% of the students believed AS drug usage is necessary for success in sport, the necessity to perform prevention programs becomes more evident. Without such programs; the competitive nature of sports, the high levels of motivation to win, drug usage by rivals, wide advertisements about the proved effects of these

drugs, and young people's intentions to have a muscular body and more attractive appearance can be factors in increasing daily usage of AS drugs, and in threatening the youth's health.

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