Original Article

The Prevalence of Anabolic-Androgenic Steroids Abuse, Knowledge and Attitude of Their Side Effects, and Attitude Toward Them Among the Female Bodybuilding Athletes in Kermanshah

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Abstract

Background & Objective: Anabolic-androgenic steroid abuse is one of the major problems in many kinds of sports, especially bodybuilding. The present study aimed at investigating the prevalence of anabolic-androgenic steroids abuse, knowledge and attitude of their side effects, and attitude toward them among the female bodybuilding athletes in Kermanshah.

Materials & Methods: The present study is a descriptive one. The target population included all female bodybuilding athletes in Kermanshah. The measuring instruments were self–reported AAS questionnaires, including 25 questions (7 questions on background information, nine questions related to knowledge, and four questions related to attitudes, and five questions related to the prevalence of abuse) (Cronbach Alpha 0.84) which were distributed among 150 female bodybuilding athletes in Kermanshah. The collected data were analyzed by descriptive statistics (frequency, percentage, mean, and standard deviation) and inferential statistics (Pearson correlation coefficient test, t-test) was used for data analysis.

Results: The results of data analyses indicate that anabolic androgenic Steroids are used currently by 36.66% of the athletes. The main reason for using these drugs is the increase in muscular tissues and strength. There was a significant negative relationship between the prevalence of anabolic-androgenic steroids consumption and attitude, awareness, and educational level. Also, there was a significant relationship between sports history with the prevalence of anabolic-androgenic steroids consumption, attitude, and awareness.

Conclusion: The female bodybuilder awareness of drug complications was significantly low. Increasing the rate of AAS consumption seems to become a public health concern that implies the need to implement educational programs by health care professionals and sports specialists.

Keywords: Body Building, Attitude, Women, awareness

Introduction

Increasing attention to sports has led to the development of sports as an industry around the world. Based on the results of studies, the use of various energy substances to increase athletic performance is a significant problem around the world, and interest in using these substances is increasing internationally (1-3). Increasing attention to sports has led to the development of sports as an industry around the world (4). The use of various energizing drugs to increase athletic performance is a major global problem, and interest in using these drugs is increasing internationally (5, 6). To increase muscle strength, endurance, and power, bodybuilders perform resistance training, and to achieve greater success and physical superiority. They use energizing drugs as supplement widely; For example, athletes (bodybuilders and weightlifters) consume 10 to 100 times more

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than the therapeutic values regardless of the side effects of anabolic-androgenic steroids (AAS) (7). AAS are compounds derived from testosterone (the primary male sex hormone) that were used in the late 1930s to treat hypogonadism and severe analgesia (8). Physiologically, AAS increases muscle strength and endurance by increasing fat-free body mass (hypertrophy), helping the body's muscle cells to produce more protein, increasing muscle size (4, 9). The use of these drugs is not limited to athletes, and many women use these drugs in the long-term period to achieve a desired physical appearance, which exposes them to severe side effects (10). AAS abuse leads to severe and irreversible damage in many organs (7, 11). Thus, concerns about the harmful effects of long-term AAS abuse have increased (4, 7). Most of the adverse effects of AAS are on the liver, cardiovascular system, kidneys, hormonal system, reproductive system, and nervous system (4). The side effects of these drugs are often on the hormonal, metabolic, and nervous systems. Also, long-term AAS consumption causes a drug accumulation in the liver, nervous system, and especially in the cerebellum (4). Other disadvantages of taking high doses of steroids include: Risk of enlarged heart, cardiac malformations, stroke, acne, premature baldness in men, hirsutism, increased blood lipids, violence, depression that leads to suicide, and water and salt retention in the organs (12, 13).

Interestingly, athletes ignore the side effects of AAS to achieve better performance; they also recommend taking these medications to others (7, 14). Numerous studies in Iran show an increase in the AAS consumption (15, 16); A study by Fijan et al. (2018) on a group of bodybuilders in Shiraz showed a consumption rate of 39 % (15). Rezaei et al. (2017) also reported in their study that 43% of bodybuilding athletes have a history of consuming AAS at least once (17). Haerinejad et al. (2016) reported 51.7 % of consumption among bodybuilding athletes in the South of Iran, Bushehr (18). In another study, Arazi and Hoseini (2010) showed that 67% of bodybuilding athletes in Rasht consumed AAS (19). Due to the importance of this issue (failure to conduct such a study on women), the present study aims to introduce common steroids used by female bodybuilders, awareness of side effects, and observation of side effects in these athletes.

Materials & Methods

This is an inferential descriptive study. The statistical population of the present study includes all women participating in bodybuilding clubs (Exercise history of at least six months of regular exercise three d/w) in Kermanshah. To select the samples, the city of Kermanshah was geographically divided into five regions, north, south, east, west, and center. Finally, 150 women were selected using cluster random sampling method from each area, depending on the number of clubs. The sample size was calculated using the Cochran's formula. It is noteworthy that all athletes participated voluntarily in this study. The entrance criteria include: having a regular exercise program (at least six months), doing exercise at least three days per week, and having no inherited diseases. Exclusion criteria included: being illiterate, unwillingness to cooperate, having had surgery to lose weight.

In this study, a 25-item questionnaire was used that was adapted and localized from the questionnaire of several other researchers (20, 21). The questionnaire was designed in two parts, the first part included demographic information (age, weight, height, and level of education) and the second part included: 7 questions for background information, nine questions related to awareness, four questions related to attitude, and five questions related to the prevalence of AAS abuse. The validity of this questionnaire was confirmed by sports scientists, psychologists, and pharmacologists with an analysis of Cronbach's Alpha of 84%. Written informed consent was obtained from all athletes, and they committed their sincere cooperation. Questionnaires were distributed among athletes after explaining the questions and how to answer them accurately. After collecting all the questionnaires, the data were analyzed with descriptive-analytical statistical methods (frequency, mean percentage, standard deviation) at a significance level of $P = 0.05$ using SPSS software version 22.

Results

In this study, with a response rate of 93.75%, a total of 150 questionnaires from 160 questionnaires were analyzed. Table 1 presents the mean±standard deviation of descriptive characteristics, education level, rate, methods, and reasons for AAS consumption of subjects; It should be mentioned that all subjects were

married. Also, results in table 1 showed that all subjects were literate and that 35.33% had a bachelor's degree. Besides, 63.33% (n=95) stated that they had no SSA consumption. While, 36.66% (n=55) of the subjects consumed SSAs, of which 63.63% were oral, 7.27% was through injection, and 29.02% used both methods (injection and oral) simultaneously. Based on the results of table 1, the reasons for consuming AAS were 49.10% for increasing muscle mass, 18.18% for increasing strength, 5.45% for increasing speed, 9.09% for increasing endurance, and 18.18% with no clear reason, respectively.

Table 1. Descriptive characteristics, education level, rate, methods, and reasons for AAS consumption

Age (year)	Weight (kg)	Height (cm)
27.90±5.50	4.98±60.13	2.11±162.50
Academic background	Number	Percentage
No Academic background	-	-
Less than a diploma	10	6.66
Diploma	21	14
Associate Degree	34	22.66
Bachelor's degree	53	35.33
Masters	29	19.33
P.H.D	3	2.02
Consumption of anabolic-androgenic steroids		
Yes (former and current)	55	36.66
No	95	63.33
How to take anabolic-androgenic steroids		
Edible	35	63.63
Injectable	4	7.27
both	16	29.01
The main reasons for consumption		
Increased muscle mass	27	49.10
Increase power	10	18.18
Increasing speed	3	5.45
Increase endurance	5	9.09
Not being aware	10	18.18
total	55	100

Results in table 2 show that none of the athletes had less than six months of sports history. The data also show that among the subjects, 53.33% (n=80) had a sports history of 6 to 12 months, 23.34% (n=35) had a sports history of 1 to 2 years, 16.67% (n=25) had a sports history of 2 to 4 years, and finally, 6.66% (n=10) had a sports history of more than four years. Also, based on the results of table 2, 14.66% (N = 22) had a history of sports championship while 85.33% of athletes (N = 128) had no history of sports championship.

The results of Chart 1 show that subjects got information on AAS, through social networks (28%), friends and teammates (25%), coaches (24%), club owners (16%), and magazines (7%), respectively.

The results of the Pearson correlation coefficient test in table 3 show a negative and significant relationship between the prevalence with awareness and attitude of AAS consumption among male bodybuilding athletes.

The results of the Pearson correlation coefficient test in table 4 show a positive and significant relationship between sports history with the prevalence, awareness, and attitude of AAS consumption among subjects in the present study. In other words, with increasing sports history and the prevalence of AAS consumption, attitudes, and awareness also increased. There

Table 2. Sports history and championship history of the participants in the study

Championship history	Number	Percentage	Sports history	Number	Percentage
No championship history	128	85.33	Less than 6 months	0	0
Regional (provincial) championship	20	13.33	6 to 12 months	80	53.33
National Championship	2	1.34	1 to 2 years	35	23.33
Asian Championship (continental)	0	0	2 to 4 years	20	13.33
World Championship	0	0	More than 4 years	5	10.01

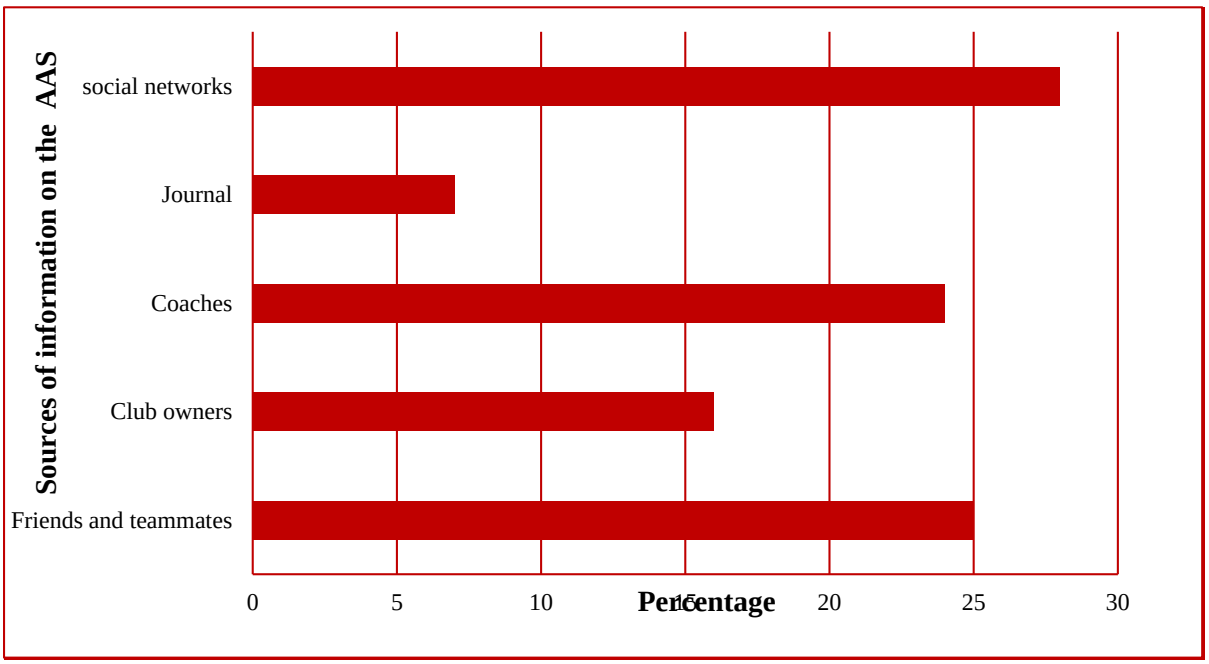

Chart 1. Sources of information on the androgenic AAS

was also a significant negative relationship between the education level and the prevalence of AAS consumption. While there was a significant positive relationship between the education level with awareness and attitude about AAS consumption among male and female athletes, by other means, as the education level increases, the prevalence of AAS consumption decreases, and awareness and attitudes about the AAS side effects increase.

the age group of 20 to 25 years (17). As mentioned above, the results of the present study showed that the mean age of onset of AAS abuse in the subjects was 24.22+3.1 while in other studies, the average age was significantly lower. One possible reason for the higher average age of onset of AAS abuse was that 198.7% of participants (n=198) in the study did not have a history championship. Numerous studies have shown that the prevalence of AAS consumption

Tble 3. Correlation coefficient results between the prevalence with awareness and attitude of AAS consumption among male bodybuilding athletes

Variables	Test	Awareness	Attitude
AAS Prevalence	The correlation coefficient	r=-0.92	r=-0.86
	Significance level	P=0.001*	P=0.08*

*: Significantly different in between variables

Table 4. Results of the correlation coefficient between sports history and education level with prevalence, awareness, and attitude of AAS consumption

Variables	Test	Prevalence	Awareness	Attitude
Sports history	The correlation coefficient	r=0.88	r=0.79	r=0.73
	Significance level	P=0.010*	P=0.019*	P=0.024*
Level of Education	The correlation coefficient	r=-0.93	r=0.87	r=0.84
	Significance level	P=0.001*	P=0.070*	P=0.011*

*: Significantly different in between variables

Discussion

This study aimed to investigate the prevalence of anabolic-androgenic steroids abuse, knowledge and attitude of their side effects, and attitude toward them. This study showed that 36.66% of the subjects used AAS, and the mean age of consumption onset was 22.24±1.3. Pope et al. (2017) reported that there were about 3 million cases of AAS abuse in the United States, two-thirds of which were non-competitive bodybuilders or non-athletes (22). Rezaei et al. (2017) reported that the highest AAS consumption in adults and athletes belonged to among athletes is significantly higher than that of non-athletes (23, 24). It is also possible that the actual prevalence rate in this study is even higher since some participants refuse to admit the abusage for conservative reasons. Due to illegal entry and sale, most of these drugs seem to be taken without a doctor's prescription and with the advice of some friends, trainers and brokers, who are the largest AAS information providers to the subjects. Lumia et al. (2010) reported that there was a reduction in the AAS consumption by reducing availability, setting strict rules for

buying and selling, educating adolescents about the short-term and long-term side effects, and being aware of the possible consequences (25).

While 18.18% of the subjects reported having enough information about AAS, it seems to be incorrect and inadequate. Arazi and Hoseini (2011) (19), and Jabari et al. (2016) (26) also reported erroneous and insufficient information about AAS in their studies. AAS are easier to access in Iran than in other countries. However, preventing the illegal distribution of AAS, and increasing awareness and attitudes about its side effects might reduce the consumption rate.

The results also showed a negative and significant relationship between education level and the prevalence of AAS consumption, and a positive and significant relationship between education level and awareness and attitudes about AAS. Consistent with the results of the present study, Fayyazi Bordbar et al. (2014) (27), Robles-Diaz et al. (2015) (28) and Jabari et al. (2016) (26) reported that higher levels of education could reduce the rate of AAS consumption. Increased education level is likely to reduce the AAS consumption by increasing awareness and attitude towards the side effects. Based on the results, higher education levels can be useful in reducing the AAS abuse in the community. Increasing the level of education is likely to reduce AAS abuse by increasing people's awareness and attitude towards the AAS side effects, and the importance of a healthy life.

The results of the present study showed that with increasing sports history and prevalence of AAS consumption, awareness, and attitudes increased. The results of the present study are consistent with the results of the studies of Saleh et al. (2014) (29), Fayyazi Bordbar et al. (2014) (27), and Arazi and Salehi (2014) (29). Even with high awareness of the side effects of these drugs, the prevalence of these drugs has increased with increasing championship history. The heroism achievement, appealing appearance, and the significant and seductive effects of teammates and friends might be the possible reason for accepting the risk of side effects of AAS abuse.

The results of the present study also showed that with increasing awareness and attitudes about the side effects of anabolic-androgenic steroids, the rate of AAS consumption decreased. Fayyazi Bordbar et al. (2014) (27) and Arazi and Hoseini (2011) (19) also reported a decreased consumption with increasing awareness and attitudes about the side effects of AAS. Regarding the importance of muscle size and hypertrophy, some people seem to accept the dangers of AAS abuse and the short and long-term side effects in order to get a better appearance in a shorter period. One of the limitations of this study is the lack of cooperation from officials, coaches and athletes to participate in this such research.

Conclusion

Generally, there are controversial issues about AAS consumption. On the one hand, many athletes believe that AAS consumption increases the athletic ability of athletes. On the other hand, doctors and other scientific authorities believe that even if there is some improvement, the side effects seem to be more significant. To reduce the large gap between these two attitudes, both physicians and athletes need to increase their information and awareness. Regarding some reasons for AAS consumption, it is recommended to design a comprehensive and complete program to reduce risk factors and prevent the consequences of AAS abuse.

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Conflict of Interests

The authors declare no competing interests.

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مقاله پژوهشی

شیوع سوء مصرف استروئیدهای آنابولیک و میزان آگاهی و نگرش از پیامدهای منفی آنها در زنان بدنساز شهرستان کرمانشاه

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چکیده

زمینه و هدف: سوء مصرف استروئیدهای آنابولیک- آندروژنیک یکی از مشکلات اساسی در بسیاری از رشته‌های ورزش به ویژه در رشته بدنسازی است. هدف این پژوهش شیوع سوء مصرف استروئیدهای آنابولیک و میزان آگاهی و نگرش از پیامدهای منفی آنها در زنان بدنساز شهرستان کرمانشاه بود.

مواد و روش ها: تحقیق حاضر از نوع توصیفی است. جامعه آماری کلیه زنان ورزشکار بدنساز شهرستان کرمانشاه بودند. ابزار اندازه گیری پرسش نامه ۲۵ سوالی (۷ سوال برای کسب اطلاعات زمینه ای، ۹ سوال مربوط به آگاهی، ۴ سوال مربوط به نگرش و ۵ سوال مربوط به شیوع مصرف) (آلفا کرونباخ ۰،۸۴) بود، که در بین ۱۵۰ نفر از ورزشکار زن به عنوان نمونه های آماری توزیع شد. برای تجزیه و تحلیل داده ها از آمار توصیفی (فراوانی، درصد، میانگین و انحراف استاندارد) و آمار استنباطی (ضریب همبستگی پیرسون در سطح معنی‌داری P≤۰/۰۵) استفاده شد.

نتایج: تجزیه و تحلیل داده‌ها نشان داد که ۳۶/۶۶ ٪ از آزمودنی‌ها در حال حاضر عادت به مصرف این داروها (آنابولیک ها و استروئیدها) داشتند. عمده‌ترین دلیل مصرف این مواد افزایش بافت عضلانی و قدرت بود. براساس نتایج این تحقیق بین شیوع مصرف مکمل‌های ورزشی (استروئیدهای آنابولیک- آندروژنی) با نگرش؛ آگاهی و سطح تحصیلات رابطه‌ی معکوس و معنی‌داری وجود دارد. همچنین، بین سابقه ورزشی با شیوع مصرف مکمل‌های ورزشی، نگرش و آگاهی رابطه‌ی کاملاً معنی‌داری وجود داشت.

نتیجه‌گیری: میزان آگاهی زنان بدنساز در مورد عوارض این داروها به طور معنادار پایین بود. به نظر می رسد افزایش روزافزون مصرف AAS به نگرانی بهداشت عمومی تبدیل شده است که دلالت بر لزوم اجرای برنامه های آموزشی توسط متخصصان بهداشت و متخصصان ورزش دارد.

کلمات کلیدی: بدنسازی، نگرش ، زنان، آگاهی

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