

Using of anabolic steroids and its association with mental health and body image concept in men referring to sports clubs in Iran

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ABSTRACT

Background: Abusing anabolic steroids due to distorted body image in athletes can impose irreversible side effects on their physical health as well as their mental health. The purpose of this study was to determine the using of anabolic steroids usage and its association with mental health and body image perception in men referring to sports clubs.

Methods: 192 athletes were recruited from Shahrekord sports clubs and were selected using stratified multi-stage sampling. Data were collected by a demographic questionnaire, Body Image Concern Inventory (BICI), and General Health Questionnaire (GHQ). All statistical analyses were conducted using SPSS software.

Results: Totally, 32.8% of the subjects had experience of using the drug in the past, present, or both, and 25.5% of all the subjects were using the drug at the time of data collection. Significant differences were observed between the two groups of drug users and non-users in the individuals' desired weight, the Littleton score, and GHQ scale including anxiety, depression, and social aspects ($p < 0.05$). Based on the results, the prevalence of anabolic steroids use was significantly higher in professional athletes. The routes of administration were injection (40.8%), oral and injection (34.7%), and oral (24.5%). 46.9% of the participants used steroids to gain muscle strength and 6.1% of them used steroids to increase their total body strength. The most commonly used drug was Dianabol.

Conclusion: Although exercise should improve mental health, the body image concerns, consumption of anabolic steroids, and the competitive atmosphere among the athletes cause disturbances in mental and physical health.

Keywords: Anabolic steroids, idealism, body image, Male athletes

INTRODUCTION

The relationship between body and mind communication is undeniable, that is, any change in one of them has a significant effect on the other. A vibrant life with exercise and physical well-being makes a person feel comfortable, have a higher self-esteem and life expectancy, and also imagine him/herself as a healthy and successful person. Exercise CER also reduces the negative psychosocial symptoms such as stress and depression. This has drawn a lot of attention to mobility and health in recent years and many people choose to join sports clubs as a solution to overcome their mental health problems^{1,2,3,4}.

At all times, great value is placed on the beauty of the human body, but people's perception of their own body may not correspond with the community standards⁵⁻⁷. Body image is a multidimensional, dynamic, unstable, and fundamentally social structure formed from a complex combination of attitudes, emotions, and values, and takes root through the representations and stereotypes that social groups value and convey throughout time. Body image is a person's perception of aesthetics or sexual attractiveness of his or her body that can affect the person's behavior as well^{8,9}. Now, in today's society, facial and body beauty are important factors that can cause appearance dissatisfaction among teenagers, leading to multiple psychological problems such as eating disorders or decreased self-esteem. Boys attempt to have a

muscular body and such factors as family, and especially media, affect the individual's body image^{9,10}. Teenagers and even younger children, who do not like their appearance and find differences between their real body image and ideal body image, are at a higher risk of mental problems such as depression, anxiety, and decreased self-esteem^{9,11}. Recent studies have found that the prevalence and severity of this disorder are almost equal between men and women¹². Girls are more concerned about their overweight and boys are more concerned about weight loss and lack of growth, which is why girls, who are overweight in puberty ages, and boys, who have late growth, are more likely to suffer from psychological problems caused by a negative body image⁹.

One of the matters that have attracted many young people's attention in recent years is the attention to their body appearance. Involving with body appearance increases the prevalence of nutritional disorders and also creates more interest for using drugs in adults and adolescents to form a muscular body. Additionally, various advertising media suggest that the ideal body for men is a muscular one and, in this way, they increase people's concerns. Anabolic steroids are probably the best known medicines in sport which are especially used for power exercises. Also, statistics show that steroids are the most abundant agent diagnosed in all positive doping samples. Many studies that have examined the awareness of individuals about anabolic-androgenic steroids and their

side effects have shown that athletes do not have sufficient information about the negative consequences of using these drugs and consume them regardless of their negative physical and behavioral effects¹³. Anabolic steroids belong to a class of male hormones called androgens which accelerate growth of muscles (anabolic effect) and secondary sexual characteristics¹⁴. The use of these drugs at high doses can cause sexual disorders and severe side effects including liver tumors and heart diseases. Other side effects include acne, facial hair growth, violence, voice change, male pattern baldness, and changes in sexuality and testicular atrophy. The findings of numerous studies have shown that steroid users, in addition to their physical health problems, also experience behavioral and psychopathological disorders and violent behaviors^{12,15,16}. Despite these adverse effects, studies have revealed that one of the important factors in the use of anabolic steroids is psychopathology in the body image, and also one of the important motivations for exercising is the person's attitude towards the body, while existential functions of the exercise itself have a weaker role^{17, 18}. Thus, the mentioned factor plays a significant role in putting healthy activities at risk.

So far, there have not been any relevant studies in this area in Shahrekord (a city located in southwest of Iran), and also there is not enough information about anabolic steroids abuse or misuse, mental state, and related factors in men referring to Shahrekord sports clubs. Therefore, we are going to come up with the answers to these ambiguities and what is going on in the sports clubs.

The purpose of this study was to determine the prevalence of anabolic steroids use and its association with mental health and body image in men referring to Shahrekord sport clubs in 2017.

METHODS

The present cross-sectional study was carried out in men joining sports clubs in Shahrekord, who were over the age of 18 years, had a history of fitness for at least one year, and referred to the club at least three times a week. For collecting the information, one of the researchers referred to the sports clubs in Shahrekord and introduced himself and distributed questionnaires among athletes. Using multi-stage stratified sampling, subjects (n=192) were recruited from 5 different sports clubs (about 40 participants were selected from each club). The number of the required subjects was considered more to cover cases in which the questionnaires were not returned. In this method, the selected clubs were in different parts of the city and were also different in terms of culture and income levels.

For assessing body image, the Body Image Concern Inventory, which was developed by Littleton et al. in 2005, was used. This questionnaire consists of 19 items that each one has five answers scored as 1 (never), 2 (rarely), 3 (sometimes), 4 (often) and 5 (always). The total score is calculated by combining these subscales, which is between 10 and 60 and is interpreted as follows:

- The score between 19 and 38 indicates a low level of body image concern.
- The score between 38 and 57 indicates a moderate level of body image concern.

- A score above 57 indicates a high level of body image concern.

The internal consistency of the Persian version of this questionnaire was reported 89% by using Cronbach's alpha coefficient¹⁹. The General Health Questionnaire (GHQ) consists of 28 items and was introduced by Goldberg and Hiler in 1979. The questionnaire has 4 sub-scales with each consisting of 7 items. The subscales are: somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression. Of all 28 items of the questionnaire, items 1-7, 8-14, 15-21, and 22-28 are for somatic symptoms, anxiety/insomnia, social dysfunction, and severe depression, respectively. Each item is accompanied by four possible responses (A: 0, B: 1, C: 2, and D: 3). For each subscale, a score equal to 6 or higher and a total score of higher than 22 indicate the possibility of existing the disease. In previous studies, the correlation between GHQ scores and the clinical outcomes relating to the severity of the disorder was reported about 80%. Validity and reliability of the Persian version of this questionnaire have also been approved²⁰. Additionally, in another study, the sensitivity and specificity were 41% and 84%, respectively, and the Cronbach's alpha coefficient was 75% for each item²¹. Other participants' characteristics such as age, weight, education, marital status, and exercise level, history of smoking and alcohol consumption, and anabolic steroids uses were also collected.

Ethics: All participants provided signed and fingerprinted informed written consent according to the Guidelines enforced by the Ethics Committee of the SKUMS. The participants can withdraw from the study whenever they wish. Data are stored in a codified confidential database.

Statistics: All statistical analyses were conducted using SPSS v.20. Descriptive statistics, T-test, Mann-Whitney, Chi-Square, and Logistic Regression were used for data analysis.

RESULTS

In this study, 192 athletes participated and were divided in two groups based on using or not using anabolic steroids. Of all of the participants, 67.2% had no experience of using steroid drugs before, while others (32.8% of the subjects) had it in the past, present, or both. Our findings also showed that 25.5% of all the subjects are using steroid drugs now, while 74.5% are not (Table1).

No significant difference was observed in terms of marital status, education, and history of smoking and alcohol consumption. However, there was a significant difference between the two groups in terms of the level of exercise (an amateur or a professional athlete), in such a way that the professional took the medications more than others. Other characteristics of these two groups can be seen in Table 2.

There were no significant differences in age, current weight, and history of exercise, and Body Mass Index (BMI) between the two groups; however, significant differences were observed in the individuals' desired weight, the Littleton score, GHQ scale, anxiety, and social and depression aspects between them and these scores were higher among the steroid users.

The mean score of Body Image Concern Inventory (the Littleton score) for the steroid users and non-steroid users was 50.91±14.36 and 37.08±11, respectively (Table 2 and Figure 1), which indicates notable concern among steroid users. Although the overall score of GHQ was higher among steroids users and this difference was significant, it was found in the GHQ assessment that there was no significant difference between the two groups in terms of physical aspect. Nevertheless, in terms of depression, anxiety, and social aspects, steroid drug users had significantly confronted with more problems (P value <0.05) (Table 2).

The mean score of GHQ for the steroid drug users and non-steroid users was 32.98±14.80 and 24.45±13.12, respectively, and this difference was statistically significant (P value <0.001) (Table 2 and Figure 2). This finding showed a lower mental health status in the steroid users compared with the other group.

To assess the effects of different variables on steroid use and to determine the interactions of these variables on each other, variables with a p-value of less than 0.1 were examined using logistic regression. By using this model, it was found that the most important factors related to the use of steroid were being a professional athlete as well as having higher scores of Littleton, General Health, and anxiety (Table 3).

Table 1: The results of the prevalence of steroid use among the participants based on time

Time and consumption status	Frequency	%age
Variable	Steroid drug uses	
No	129	67.2
Present	37	19.3
Past	14	7.3
Past/present	12	6.3
Total	192	100

Table 2: The characteristics of the two groups of participants and their scores

Characteristic (Mean±SD)	Non-users (n=143)	Users (n=49)	p-value
Age(year)	26.76±5.67	25.96±5.64	0.36
Weight(Kg)	78.79±12.44	76.55±10.32	0.49
Desired weight(Kg)	80.62±10.58	83.85±12.07	0.03*
Duration of workout(year)	3.87±3.93	4.71±4.83	0.37
Body Mass Index(Kg/m ²)	24.46±3.34	24.13±3.22	0.58
Body Image	37.08±11.59	50.91±14.36	<0.001*
Total GHQ [†]	24.45±13.13	32.98±14.80	<0.001*
Somatic Scale	6.17±3.58	7.12±4.21	0.28
Anxiety Scale	6.41±4.40	10.51±5.64	<0.001*
Social Scale	7.84±3.89	9.69±3.65	0.01*
Depression Scale	4.02±4.99	5.65±3.98	<0.001*

*: Statistically significant, †: General Health Questionnaire

Table 3: The relationship between different factors and using anabolic steroids

Characteristics	Sig.	Exp B (Odds Ratio)	Odds Ratio (95% C.I)	
			Min.	Max.
Level of athlete	0.001*	0.044	0.010	0.188
Littleton score	0.001*	1.086	1.046	1.127
GHQ Score	0.011*	1.922	1.866	1.982
Anxiety	0.001*	1.340	1.130	1.589

*Statistically significant

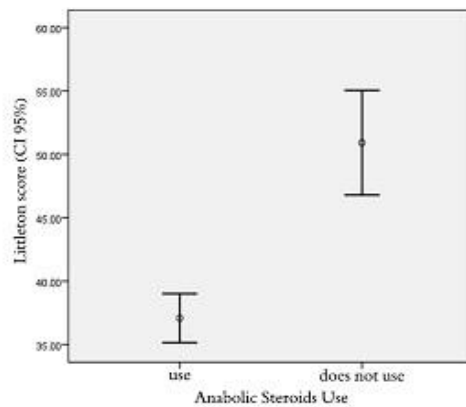


Figure 1- Littleton score in two groups

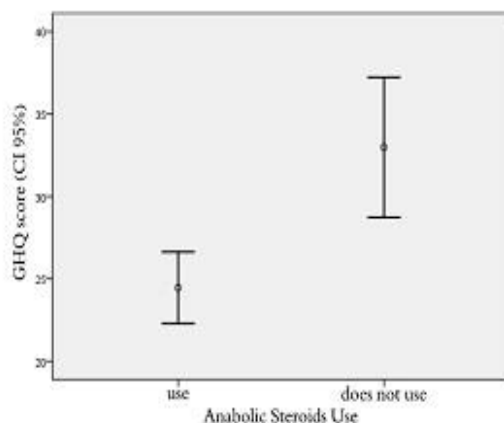


Figure 2- GHQ score in two groups

DISCUSSION

It was observed in the present study that 32.8% of athletes referring to the sports clubs had experienced the anabolic steroids use in the past, present, or both. Our findings also showed that 25.5% of all the subjects were using steroid drugs at the time of this study, while 74.55% were not. The findings showed that the use of these steroid drugs among bodybuilder athletes is an undeniable fact and the problem with taking these dangerous steroid drugs (anabolic steroids) is not just for industrialized countries. In other studies, different prevalence rates (13-15%, 24.3%, 62.7%, 32%, 64%) have been reported for steroid use^{22-25, 15}. In these studies, it was speculated that 38-44.4% of athletes had a history of using steroids. Interestingly, the prevalence of using these drugs has significantly increased during a 14-year period¹³.

There were no significant differences in terms of age, current weight, history of exercise, and BMI between the two groups; however, significant differences were observed between them in the individuals' desired weight and the Littleton and GHQ scales (anxiety, depression, and social aspects), and all of these factors were more distorted among the steroid users. In other words, those who had consumed steroids had worse mental health status. For the steroid drug user group, the mean score of Body Image Concern Inventory (the Littleton score) was 50.91 ± 14.36 , which means a moderate level of body image concern. In men, body dissatisfaction is associated with depression, eating disorders, use of reinforcing drugs, and decreased self-confidence²⁶. In a study conducted by Orani and Halabchi in 2015, the abuse of anabolic steroids among athletes and its association with demographic, social, and psychological factors were examined. They reported that the prevalence rate of anabolic steroid use among the athletes was 16.6%. Among the different demographic, social, and psychological factors including age, job,

average income, physical activity (per month), exercise (per week), sport activity goals, mental and psychological health, and body image, only the average income and the onset time of exercise were inversely correlated with using the anabolic steroid drug²⁷. But in this study, body image dissatisfaction is one of the important factors that play a role as a strong motive. This result revealed that having good fitness has an effective power to encourage the adolescents and adults to go to the clubs.

In the steroid-user group, the mean score of GHQ was 32.98 ± 14.80 , and since the score of more than 6 and a total score of more than 22 indicates the symptoms of the disease, our findings showed a lower mental health status among the steroid users compared with the other group.

The abuse of anabolic steroids, especially in high doses, can result in adverse somatic effects and psychological problems such as increased aggression and invasion, increased behavioral disorders, and increased crime. Chronic use of anabolic steroids may lead to mental disorders and abnormalities²⁸.

The abuse of steroids has also other adverse effects on physical, emotional, and psychological health of both men and women. Physical side effects in men include acne, gynecomastia, reduced sperm volume, testicular degeneration, and baldness. In women, appearing masculine characteristics such as body hair growth, male voice, heart attack, and liver cancer are the main concerns. It has also been reported that steroids users are vulnerable to main depressive episodes after three months of stopping these drugs²⁹⁻³¹.

Studies have frequently emphasized the direct relationship between exercise and mental health, but the present study showed that athletes using steroids did not have acceptable mental health. These results showed that the positive effects of exercise such as vitality, relaxation, and enhancing social skills can be faded as a result of consuming anabolic steroids. With these interpretations,

the existential philosophy of sport will be eliminated in these athletes.

The prevalence of consuming anabolic drugs among the athletes is significantly higher than that among the non-athletes^{32, 33}. Likewise, there was a significant relationship between the history of doing exercise and the use of anabolic steroids. It has been estimated that the prevalence of using anabolic steroid drugs among professional athletes could be about 70%, and also it has been suggested that the real rate might be even higher due to conservative reasons¹³. Additionally, significant relationships were observed between being champions and the level of individuals' awareness with the prevalence of using steroid drugs²⁵.

Different studies have suggested that the most important factors affecting the use of steroid drugs are the lack of adequate knowledge about them and their side effects, unusual tendency to have a muscular body and better appearance, and inclination to win the championship¹³. Therefore, more attention is required from the government and relevant authorities in order to deal with the use of anabolic steroids. If necessary and effective solutions are not considered, the athletes, especially the younger ones, would be in great danger. It is recommended that all relevant organizations such as the Ministries of Health, Sports and Youth, and Education be able to enhance the awareness of adolescents, athletes, and coaches in this field. The opportunity to improve the level of fitness, performance, and well-being due to exercise and physical activity should not become life threatening and impose physical and mental health risks in sports communities. Some effective actions have been recommended to deal with this problem, such as reducing the availability of harmful and illegal drugs, restricting the use of anabolic steroids to special medical conditions, producing or importing safe and affordable workout supplements to help young people have muscular bodies, holding obligatory training courses to increase the awareness of coaches, authorities and athletes about the side effects of steroids, using mass media for informing young people, and doing doping tests during domestic and national competitions with keeping track of them during workouts.

Kanayama et al. studied the psychological and medical outcomes of long-term use of anabolic steroids and stated that long-term administration of high doses of anabolic steroids could lead to cardiovascular diseases and prostate cancer. Besides, high concentrations of anabolic steroids can lead to neuropathological disorders through apoptotic effects against different types of cells, such as neural stem cells²⁹. It seems that the abuse of anabolic steroids is associated with a wide range of long-term psychiatric effects, such as dependency syndrome, mood disorders, as well as an increase in tendency of abusing similar drugs. Hypomania or Manic syndrome, which is sometimes associated with invasion and aggression, has been reported in the users of these drugs³⁴. Several studies also have shown that depression symptoms can be related to anabolic steroids, especially when users have stopped taking these drugs which is related to suppression of hypothalamic functions. Suicide has also been reported as a result of the abuse of anabolic steroid drugs^{34, 35}.

Additionally, anabolic steroid drug users may suffer from body image disorders, including deformity and muscle dysmorphia^{34, 36, 37}. Those men who are concerned about their body image may initially be stimulated to use anabolic steroids, and in the next phases, their worries may even be paradoxically intensified, in a way that muscle volume becomes the center of self-confidence in these individuals and its loss or reduction causes anxiety, which is associated with the syndrome of anabolic steroid drugs dependence^{34, 35}. Different treatments for mental disorders can improve the quality of life of these patients³⁸⁻⁴¹, but further studies are recommended to determine the role of anabolic steroids and factors associated with the use of these drugs in various types of physiological and psychiatric disorders.

CONCLUSION

In general, it seems that the prevalence of using steroids such as Dianabol, Nandrolone, Testosterone, etc. among athletes is notable, so sport and health organizations should be cooperated with each other in order to increase the awareness of athletes. As it seems that the lack of knowledge about the side effects of these drugs draws athletes' attention to taking steroid drugs, helping to improve their awareness will be a major step in preventing steroid abuse. Another point is that professional athletes have more inclination to consume anabolic steroids and, without taking effective actions, they may be caught in a vicious circle of abusing anabolic steroids, mental health disturbance, and body image concern.

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