
Anabolic Supplements Abuse among Athletes in Baghdad Gyms

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Abstract:

Background: Anabolic androgenic steroid abuse has become a public health problem in many countries. Over the last few years the use of anabolic steroids has become increasingly common amongst amateur athletes and for aesthetic purposes. As a result, the adverse events related to their use are being seen more frequently. Recent studies suggest that 3 to 12% of male adolescents and about 1 to 2% female adolescents use at some time during their lives.

Objective: to uncover the extent of use of anabolic supplements among gymnasium attendants and their attitude towards it.

Methods: This cross-sectional study was conducted among male athletes attending gyms during the period from February through September 2011 in many gyms distributed in both sides of Baghdad city. The sampling method was a convenient non-random one, carried out in a sample of athletes trained in fifteen of Baghdad gyms during the study period. An anonymous self-administered questionnaire form had been developed which includes demographic and other factors that show the situation and attitude of the athletes towards anabolic supplements.

Results: The mean age of respondents was (25.4±6.1) ranging from 16-52 year. The sample was classified according to the usage of anabolic supplements into: users (73.8%) and non-users (26.2%), the route of use is either orally (43.4%), intramuscularly (21.7%), or both (34.9%). The side effects that are experienced by the study sample accounted for 32.3% of the users (134 respondents). These side effects are as follows: skin diseases (20.1%), renal (6.7%), behavioral side effects (6.7%), cardiovascular problems (5.2%), uro-genital disorders (6.7%), liver problems (0.7%).

Conclusion: It can be concluded from this study that most of gyms' members belong to 15-24, and 25-34 years and three quarters of them use anabolic supplements. They believe that these supplements are highly risky but don't have the ability to stop them. It is recommended to start community based health education programs to increase the knowledge about the use of these drugs by cooperated efforts between Ministry of health and Ministry of youth and sport. Also strengthen the legislations to regulate the importation, quality control, and supervision of these drugs generally and of anabolic steroid and hormones specifically.

Introduction:

Anabolic androgenic steroid (AAS) abuse has become a public health problem in many countries¹. Over the last few years the use of anabolic steroids has become increasingly common amongst amateur athletes and for aesthetic purposes. As a result, the adverse events related to their use are being seen more frequently². Recent studies suggest that 3 to 12% of male adolescents and about 1 to 2% female adolescents use AAS at some time during their lives³. The use of anabolic steroids and vitamin supplements has reached alarming proportions in the last decades⁴.

The health care system provides the illegal AAS to 48.1% of abusers. Physicians are involved in illegal prescription of AAS and monitoring of 32.1 % of AAS abusers⁵. It has been suggested that the prevalence of use among high-school students in some countries may be as high as 2.7%. Male students use anabolic steroids more frequently than female students and, on average, those who participate in sports use steroids more often than those who do not⁶.

Health risks can be produced by long-term use or excessive doses of anabolic steroids^{7,8}. These effects include: harmful changes in cholesterol levels (increased low-density lipoprotein and decreased high-density lipoprotein); acne which is fairly common among anabolic users; high blood pressure^{9,10}, alteration in fasting blood sugar, and testicular atrophy. It also increases the risk of cardiovascular disease or coronary artery disease myocardial hypertrophy¹¹.

The objective of this study is to uncover the extent of use of anabolic supplements among gymnasium attendants and their attitude towards it.

Methods:

This is a cross-sectional study with an analytic element, conducted among male athletes attending gyms during the period from February through September 2011, in many gyms distributed in both sides of Baghdad city. Those gyms or fitness centers are halls containing several sports equipment headed by experienced athlete in body building (coach).

The coach is usually one of the athletes who had previous experience and is responsible for providing the training services to the attendees of these gyms, prescribing the types and doses of anabolic supplements, and may help in the injection of the supplements to the gyms members, and manage all the other administrative aspects. The services that are provided to these athletes include: sports instruments, equipments, information, training courses, and purchasing the anabolic supplements to gym participants.

The sampling method was a convenient non-random one, carried out in a sample of athletes trained in fifteen of Baghdad gyms during the study period.

An anonymous self-administered questionnaire form had been developed that includes demographic and other factors that show the current situation and attitude of the athletes towards anabolic supplements.

Data was collected through a self administered questionnaire filled by participants themselves, the gym's manager (coach) was asked to distribute the questionnaire among gym participants after taking their permission to participate. Privacy was considered and the respondents were given the right to participate (or not) in the study without introducing their names neither the gym's name.

The SPSS (Statistical Package for the Social Science) program, version 11.5 was used for all computerized statistical analyses. The results were expressed as mean $\pm$ SD (standard deviation) or proportion. Categorical variables were compared using Chi-square (X^2) tests.

P - Value equal or less than 0.05 was considered to be statistically significant.

Results:

This study had enrolled 562 athletes who are engaged in gyms. The mean age of respondents was (25.4 $\pm$ 6.1) ranging from 16-52 year, 49.8% of them are seated in the age group (15-24 years), 40.6% in the age group (25-34), and 9.6% of them are older than 35 years. The sample was classified according to the usage of anabolic supplements into: users (73.8%) and non-users (26.2%), the route of use is either orally (43.4%), intramuscularly (21.7%), or both (34.9%). (**Table 1**)

Digging for the belief that anabolic supplements cause risk is shown in table 2. The side effects that are experienced by the study sample accounted for 32.3% of the users (134 respondents). These side effects are as follows: skin diseases (20.1%), renal (6.7%), behavioral side effects (6.7%), cardiovascular problems (5.2%), uro-genital disorders (6.7%), liver problems (0.7%), and 53.7% didn't answer (**Table 2**).

In respect to the Mood changes; 36.3% experienced mood changes while 63.7% did not. Comparing mood changes in the supplements users and non-users revealed that 45.8% of the users experience mood changes and only 9.5% of non-users did. A high significant difference was found between the two groups (**Table 3**).

Regarding the correct use of these supplements; 33% are not sure about the correct use, while 67% claim that they use these supplements in a correct way. Those who claim correct usage obtained their knowledge from the coach in 47.8%, from doctors in 6.5%, from friends in 10.8%, from experience in 7.9%, leaflets in 7.9%, others (books, net, and magazines) gave knowledge to 5% of the respondents and those who have more than one source form 3.2%. The remaining 10.8% didn't answer (**Table 4**).

Table 4 also shows the awareness about the correct use in accordance to age; 55.7% of the age group (15-24) is sure that they are using the supplements correctly, while 44.3 % are not. In the age group (25-34); 73.8% were sure about the correct use and 26.2% were not. In those who are older than 35 years; 95% were sure about their correct use and 5% were not. A highly significant difference was found.

Most of the anabolic users in the sample (85.3%) reported that they are able to stop using the anabolic supplements, while (14.7%) reported that they can't stop. Besides, 71.4% of anabolic supplements users had previous attempt to stop the use of anabolic supplements while the remaining 28.6% didn't try at all. **Table 5** shows this fact and reveals that 82.1% of the anabolic users returned back to use after stoppage, while 17.9% did not. Some of those who tried to stop (54%) experienced some changes, while 46% haven't experience any changes after withdrawal. The changes include decrease muscle size 40.1%, decrease power 21.8%, decrease muscle size and power 13.2%, changes in mood 2.5%, and changes in sexual potency 1.8% (not tabulated).

Anabolic users that did seek medical advice among the sample were 34%, while 66% did not. Many reasons were given for seeking medical advice like checkup (29.8%), cardiovascular reasons (8.5%), uro-genital tract (12.1%), skin problems (1.4%), and other causes including masses at injection sites and extraordinary flu (2.8%). also (45.4 %) have sought medical advice but didn't mention the reason for that (**Table 6**).

Table 1: Use of anabolic supplements according to age and route of use

Age groups	Anabolic users		Total	Route of use	No. (%)
	Yes	No			
	No. (%)	No. (%)			
15-24	203 (72.5)	77 (27.5)	280	Oral	180 (43.4)
25-34	172 (75.4)	56 (24.6)	228	Intramuscular	90 (21.7)
35 & more	40 (74.1)	14 (25.9)	45	Both routes	145 (34.9)
Total	415 (73.8)	147 (26.2)	562	subtotal	415 (100.0)

$X^2=0.56$

df=2

$P=0.75$

Table 2: Belief about risk of anabolic supplements & some experienced side effects

	Belief that anabolic are risky		Total
	yes	No	
15-24	193 (68.9)	87 (31.1)	280 (100)
25-34	185 (81.2)	43 (18.8)	228 (100)
More than 35	42 (77.7)	12 (22.3)	54 (100)
Total	420 (74.7)	142 (25.3)	562 (100)
$X^2=10.8$ $df=1$ $P=0.006$			
Side effect experienced by respondents	No (%)		
Skin problems	27 (20.1)		
Renal	9 (6.7)		
Uro genital	9 (6.7)		
Behavioral	9 (6.7)		
Cardiovascular	7 (5.2)		
Liver	1 (0.7)		
No answer	72 (53.7)		
Total	134 (100)		

Table 3: Mood changes among anabolic users and non users

User of anabolic	Mood changes		Total
	Yes	No	No. (%)
	No. (%)	No. (%)	
Yes	190 (45.8)	225 (54.2)	415 (100)
No	14 (9.5)	133 (90.5)	147 (100)
Total	204 (36.3)	358 (63.7)	562 (100)
$X^2=60.56$ $df=1$ $P=0.000001$			

Table 4: Respondents' attitude and knowledge regarding correct use of anabolic

Know the correct use		No. (%)	
Yes	278 (67)	Source of knowledge	
		Coach	133 (47.8)
		Doctor	18 (6.5)
		Friend	30 (10.8)
		Experience	22 (7.9)
		Leaflet	22 (7.9)
		Others (net, magazines,...)	14 (5.0)
		More than one source	9 (3.2)
		Don't answer	30 (10.8)
Not sure	137 (33)		
Total	415 (100)		

Know the correct use of anabolic supplements

Age group	Yes	No	Total
15-24	113 (55.7)	90 (44.3)	203
25-34	127 (73.8)	45 (26.2)	172
More than 35	38 (95)	2 (5)	40
Total	278 (67)	137 (33)	415
$X^2=29.61$ $df=2$ $P=0.000001$			

Table 5: Ability and trial to stop the anabolic supplements

	Can stop	Previously stopped
	No. (%)	No. (%)
Yes	355 (85.3)	296 (71.4)
No	60 (14.7)	119 (28.6)
Total	415 (100.0)	415 (100.0)

Return back to use

	No	Yes	Total
	No. (%)	No. (%)	No. (%)
Returned back	53 (17.9)	243 (82.1)	296 (100)
Felt changes	136 (46)	160 (54)	296 (100)

Table 6: seeking for medical advice (and reasons for) among users

Seeking for medical advice (and reasons for) among users		
Seek medical advice		No. (%)
Yes		141(34)
	Reasons	No. (%)
	Check up	42 (29.8)
	Uro-genital tract	17 (12.1)
	Cardiovascular system	12 (8.5)
	Dermatology	2 (1.4)
	Others*	4 (2.8)
	No answer	64 (45.4)
	subtotal	141 (100)
No		274 (66)
Total		415 (100)

*others (masses at injection sites, and extra ordinary flu)○

Discussion:

During recent years, the use of anabolic androgenic steroids (AAS) has received an increased attention, not only as a doping issue inside, but also outside the elite world of sport¹². The gyms included in this study were chosen from different locations within Baghdad city including both districts (central and peripheral sectors within each) as previous studies demonstrated that the use of anabolic supplements is found in cities and smaller communities¹³.

The current study showed that; the age groups of participants are mostly within (15-34) years, while those above 35 years were the least group. This finding may be explained by the changes in aims and interests according to age, those in the late teens, twenties and early thirties are usually more concerned about their body image to increase their own self esteem, while those at the late thirties and above usually have no interest in that. A study conducted by *Parkinson et al* found that widespread use of AAS during adolescence is a significant concern, and most of the users begin using these supplements in their teens or early twenties¹⁴.

The anabolic supplements users form three quarters of the study sample. This reflects the extent of use of these supplements among gym's attendants, it agrees

with many other studies; some of which regard this phenomenon as a significant concern¹⁵, while others regard it as a potential public health problem in future years¹⁶. Yet; this number does not explore the exact limits of this problem. Epidemiological studies on this topic are notoriously difficult to conduct in a reliable manner since anabolic supplements usage is largely clandestine, partly because the drugs are illegal and partly because usage tends to take place in closed sub-cultural settings¹³, so, it is usually underestimated¹⁷.

Regarding the rout of use, the results showed that it is mostly oral; this could be due to convenience or to the belief that oral forms are safer for the users as the participants stated. The fact is that oral forms may cause serious side effects since they are highly metabolized by the liver and high doses may damage it. Another study conducted by *Cohen J et al* at 2007 argued that the injectable form was the most common method used by individuals taking anabolic steroids for non-medical purposes¹⁸.

Regarding the risk of anabolic supplements; about three quarters of the respondents believe that these supplements are harmful (yet; they still use it). This is consistent with the results of an article published in 2004 by *Pope et al* which revealed that AAS continue to be used despite knowledge of the potentially serious

side effects of these supplements¹⁹, another study had found that AAS users often do not consider their drug use as a pathological issue, and may even perceive AAS as a positive aspect of a healthy and athletic lifestyle²⁰. A study conducted by Hildebrandt T et al related the raises in the use of AAS supplements despite the risk of them to an interesting paradox in the use of drugs associated with a number of health benefits in spite of the possibility of negative health consequences²¹.

Skin problems are the most accountable side effect of AAS as mentioned by the athletes, while other side effects (renal, cardiovascular, hepatic, urogenital, and behavioral) are also developed but in fewer proportions. A study conducted by Melinik et al in Germany revealed that dermatological disorders (specifically acne) usually developed in AAS users⁵. A study established in Stockholm on several gyms' members reflected that acne occurs in about 50 % of AAS abusers and is an important clinical indicator of AAS abuse¹². Another study presented by Satoru M. Sato et al had find that the side-effects range from hypogonadism and gynecomastia to cardiac and hepatic dysfunction, in addition to mood alterations, aggression, and dependence²², while a study of Casavant MJ et al revealed that the side effects from AAS use reported in men include impotence and infertility due to inhibited endogenous testosterone production, in addition to psychiatric side effects which include irritability, aggressiveness, mood swings, decreased impulse control, and suicidal or homicidal behavior²³.

Mood changes when considered in the current study revealed significant differences between users and non users, this result agrees with the survey of male users versus nonusers of AAS for Strength Training Anabolic Supplement which was conducted by Ip Ej et al in California and revealed that AAS users were more likely than nonusers to meet criteria for mood disorder and an anxiety disorder²⁴. The mood changes in the current study were increasing with period of use (proved statistically) and are consistent with *D'Errico S* et al study that was conducted in Italy and noticed that the chronic use of (AAS) has been known to cause serious adverse effects²⁵.

The current study figured out that the knowledge regarding the correct use of these materials is increasing with age and a significant difference had been demonstrated. This may be due to that the long period of use gives more information. *Perry PJ* et al stated that those users have great interest for learning more about these supplements so their information are increasing with their use. The coach was the most accountable source for the knowledge, while friends, doctors, sport magazines, net, and T.V., contribute to the other part, this is in disagreement with a survey of anabolic supplements use in weightlifters and body builders in 2005 which revealed that literatures (books, magazines) and web sites were the main sources of information²⁶.

Regarding the users own ability to stop these supplements; there are 14.7% that didn't have the ability to stop and this is an important indicator regarding the future dependence on these supplements,

a study conducted in Belmont by *Gen Kanayama* et al demonstrated that AAS dependence may pose a growing public health problem in future years, but remains little studied²⁷. Another study conducted by *Jennifer L. Triemstra* et al determined that most AAS users initiate use for the anabolic properties, but many subsequently develop physical and psychological dependence²⁸.

Regarding history of previous stoppage, more than a quarter of the users denied that, and this is an alarming pointer for the danger of future dependence. The majority of users who had history of stoppage mentioned returning back to these supplements, and this is also an early step on the way of supplements dependence. During the period of stoppage; more than half of them had several changes, among which decrease muscle size was the most accountable one, this disagrees with a *Gen Kanayama* et al study which relates the desire to resume AAS use and subsequent AAS dependence mostly to experiencing a frank major depression from hypogonadism²⁰.

One third of the users stated that they did seek medical advice during their use while the other two third did not. This finding did not agree with *Cohen* et al study in USA which determined that two third of their study sample were seeking medical supervision for anabolic supplements use, but at a different aspect of the same study it was mentioned that two third of respondent feel that the medical community's knowledge of non medical use of these supplements was deficient¹⁸. *Pope HG* et al stated that anabolic supplements users find that the doctors and other health care staff have limited knowledge about this issue¹⁹. It can be concluded from this study that most of gyms' members belong to 15-24, and 25-34 years and three quarters of them use anabolic supplements. They believe that these supplements are highly risky but don't have the ability to stop it. It is recommended to start community based health education programs to increase the knowledge about the use of these drugs by cooperated efforts between Ministry of health and Ministry of youth and sport. Also strengthen the legislations to regulate the importation, quality control, and supervision of these drugs generally and of anabolic steroid and hormones in particular.

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