

Anabolic supplements use among athletes in Babylon/Iraq 2021

Abdulmuttaleb Abduljabbar F. Fayyadh

MBChB, FIBMS (Family Medicine)
Iraqi MoH, Babylon Health Directorate

Abstract

Background: Over the past decade it has been obvious that the prevalence of anabolic androgenic steroid abuse is increasing rapidly amongst amateur athletes and for aesthetic purposes. As a result, the adverse events related to their use are being seen more frequently.

Objectives: To uncover the extent of use of anabolic supplement among gymnasium attendants and their attitude towards it.

Methods: The study was done during a period of six months, starting from first September 2020 till the end of February 2021. A convenient, non-randomized study sample was chosen from the athletes attending thirteen gyms in deferent regions (district) in Babylon governorate, Data were collected by a questionnaire filled by the participants.

Results: The mean age of participants was 25.4 + 6.1years. The users were 334 (73.9%) and non-users 118 (26.1%). Out of the total study group 338 (74.8%) believes that these supplements carry a risk. Among the users, 49.1% had mood changes. The study showed that 53% are not sure about the correct use, while 47% claim that they use supplements in a correct way. Most of the anabolic users in the sample (78.7%) reported that they are able to stop using the anabolic supplements, while 21.3% reported that they can't stop them.

Conclusion: most of the gym attendees were young and most of them used anabolic supplements.

Key words: Anabolic, supplement, Gym, knowledge.

Introduction

Over the past decade it has been obvious that the prevalence of Anabolic Androgens Steroid (AAS) abuse is increasing rapidly. ⁽¹⁾ Equally alarming and less well known is the fact that of these athletes only around one half are known to have illegal prescription by health care system provides. ⁽²⁾

Physicians are involved in illegal prescription of AAS and monitoring of 32.1% of AAS abuse. ⁽³⁾ Recent studies shows that the prevalence continues to rise globally and that 3-12% of male adolescents and about 1-2% of female adolescent use AAS at some time during their lives. The use of anabolic steroid and vitamins supplement has reached alarming proportions in the last decades. ⁽⁴⁾ The excessive doses and long-term use of anabolic steroids produce health risks. ^(5,6)

Hyperlipidemia manifests itself as changes in cholesterol levels, increased low-density lipoprotein and decreased high-density lipoprotein. Also acne, high blood pressure was reported. ⁽⁷⁾ Alteration in fasting blood sugar, and testicular atrophy, cardiovascular disease, ⁽⁸⁾ coronary artery diseases and myocardial hypertrophy. ⁽⁹⁾

The Aim of this study is to uncover the extent of use anabolic supplements among gymnasium attendants and their attitude towards these supplements in Babylon governorate.

Subjects and Methods

The study was done during a period of six months, starting from 1st September 2020 till the end

of February 2021, the study conducted in many gym centers distributed in Babylon governorate. Total population of Babylon governorate is 1,824,251, those gyms of fitness centers are halls contain several sport equipment, and it is under supervision of an experienced athlete (coach). The coach providing the training service to the attendees of those gyms, prescribing the dose of anabolic supplements, may help in the injection of the supplement to the gym members and manage all other administrative aspects. The services that are provided to these athletes include: preparation of sport instruments; equipment information; training courses; and purchasing the anabolic supplements to gym participants.

A convenient, non-randomized study sample was chosen from the athletes attending thirteen gyms in different regions (district) in Babylon governorate. These are Hilla, Muhaweel, the Mussayib and Hashymia region during the study period.

A self-administered questionnaire form was designed for the purpose of the study; it was revised by experts before application. The instrument covered the demographic factors, and other variables to explore knowledge, belief, and attitude of the athletes towards anabolic supplements. The gym's manager (coach) was asked to distribute the questionnaire among gym's attendees after taking their permission to participate.

Privacy was considered through anonymous questionnaire and not to mention the name of the

gyms. The participants fill in the study questionnaire tool by themselves.

Statistical issue: The SPSS (Statistical Package for the Social Science) program, version 11.5 was used for data grouping and statistical analyses. The results were expressed as mean \pm standard derivation or proportion, Categorical variables were tested by using Chi-square (X^2) tests, P-value equal or less than (0.05) was considered as significant.

Results

This study had enrolled 452 athletes who are engaged in gyms. The mean age of respondents was 25.4 ± 6.1 , range (15-44 years). Fifty percent 225(49.8%) of registrants are seated in the age group (15-24 years), 184 (40.7 %) in the age group (25-34 years) and 43 (9.5%) of them older than 34 years %. The sample was classified according to the usage of anabolic supplements into: users 334 (73.9%) and non-users 118 (26.1%) as shown in table-1.

Table 1: Distribution of participants according to using of anabolic supplements and age in Babylon governorate, 2021.

Age group	Using anabolic supplement			Chi-sq test P value
	Yes	No	Total	
	n (%)	n (%)	N (%)	
15-24	163 (72.4)	62 (27.6)	225 (49.8)	0.5107 0.7746
25-34	139 (75.5)	45 (24.5)	184 (40.7)	
35-44	32 (74.4)	11 (25.6)	43 (9.5%)	
total	334 (73.9)	118 (26.1)	452	

The belief that anabolic supplements are risky was shown in table-2. Out of the total study group

338 (73.8%) believes that these supplements carry a risk and the remaining 26.2% do not believe in that.

Table 2: belief of the participants (452) about the risk of anabolic supplements in different age groups in Babylon governorate, 2021.

Age group	Belief that anabolic are risky			Chi-sq test P value
	Yes	No	Total	
	n (%)	n (%)	N	
15-24	155 (68.4)	70 (31.1)	255	8.5643 0.014
25-34	149 (81.2)	34 (18.8)	188	
35-44	34 (77.2)	10 (22.8)	44	
total	338 (74.8)	116 (25.2)	452	

The route of using these supplements is either oral (43.4%), intramuscular (21.5%) or both routes (35.1%) (Fig-1).

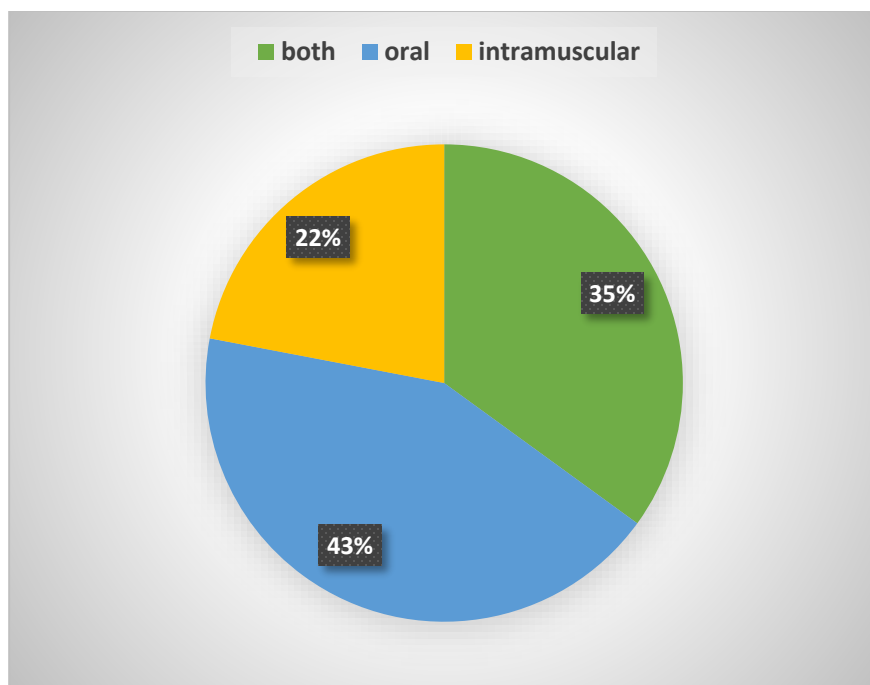


Fig 1: routs of taking the anabolic

Table-3 represented the mood change among the users and non-users; among the users 164 (49.1%) had mood changes but 170 (50.9%) had no

such changes in mood, The difference between users and non-users was significant (P-0.014).

Table 3: mood changes among the study participants (n=452) in Babylon governorate, 2021.

Using anabolic	Mood changes			Chi-sq test P value
	Yes	No	Total	
	n (%)	n (%)	N	
Yes	164 (49.1)	170 (50.9)	334	50.6471 0.0001
No	14 (11.9)	104 (88.1)	118	
Total	178	274	452	

Regarding the correct use of these supplement, table-4 revealed that 177 (53%) are not sure about the correct use, while 157 (47%) claim that they use supplements in a correct way. Most of those who

claim correct usage obtained their knowledge from the coach in 38.2%, followed by those who gain knowledge from friends (12.7%).

Table 4: knowledge about anabolic among participants (n=452) in Babylon governorate, 2021.

Knowledge among participants		n (%)
Knowledge about correct usage of anabolic	Not sure	177 (53)
	Yes	157 (47)
	Total	334 (100)
Source of knowledge	Coach	60 (38.2)
	Doctors	15 (9.6)
	Friends	20 (12.7)
	Experience	17 (10.8)
	*Other	16 (10.2)
	More than one	24 (15.3)
	No response	5 (3.2)
	Total	157 (100)
*Other: sport magazine, net and TV		

Most of the anabolic users in the sample, 263 (78.7%) reported that they are able to stop using the anabolic supplements, while 71 (21.3%) reported that they can't stop them. Besides, 229 (68.5%) of

anabolic supplements users had previous attempt to stop the use of anabolic supplements while the remaining (31.5%) did not try at all (Table-5).

Table 5: The distribution of studied sample (n=334) according to ability and previous trial to stop anabolic supplements in Babylon governorate, 2021.

	Yes	No	Total
	n (%)	n (%)	N
Can stop	263 (78.7)	71 (21.3)	334
Previously stopped	229 (68.5)	105 (31.5)	334

Anabolic users seek medical advice when they complain because of these supplements were 154 (46.1%), while 180 (53.9%) did not. Many reasons

were giving for seeking medical advice listed in (table-6).

Table 6: The distribution of studied sample (n=334) according to seeking medical advice and reasons for that among users in Babylon governorate, 2021

		n (%)
Seeking medical advice	No	180 (53.9)
	Yes	154 (46.1)
	Total	334 (100)
Reasons	Check up	60 (38.9)
	Urogenital tract	14 (9.2)
	Cardiovascular system	9 (5.8)
	Dermatology	2 (1.3)
	*Other	3 (1.9)
	No response	66 (42.9)
	Total	154
* Other: 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 sport⁽¹⁰⁾. The current study showed that the age of participants was mostly in the age group 15-34 years and the frequency decreases with the increase in age. This finding may be explained by the changes in aims and interests of subjects in different age group, those in the late teens and twenties and early thirties are usually more concerned about their body image to increase their own self esteem while those who are older have no such interest. A study conducted by Parkinson *et al.* found that widespread use of AAS during adolescence is significant concern, and most of the users begin these supplements in their teens or early twenties⁽¹¹⁾

The Anabolic supplements users form three quarters of the study sample; this reflects the extent of use of these supplements among gym 's attendants. Yet, this finding does not explore the exact limits of this problem, because of the small size study. It agrees with many other studies; some of which regard this phenomenon as significant concern⁽¹²⁾ while others regard it as a potential public health issue in future years.⁽¹³⁾ Nilson *et al.* stated that epidemiological studies on this topic are clearly difficult to conduct in reliable manner since anabolic supplements usage is largely in secret, partly because the drugs are illegal and partly because usage tends to take place in closed subcultural setting so it is usually underestimated.⁽¹⁴⁾

Oral route is the most common route of taking these supplements, this could be due to convenience or to a belief that oral forms are safer for the users. Still oral forms may cause serious side effects since they are metabolized by the liver and high doses may damage it. In a study conducted by Cohen *et al.* in 2007 argued that the injectable form was the common route.⁽¹⁵⁾

Regarding the risk of anabolic supplements, about three quarters of respondents believe that these supplements are risky. 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 supplements.⁽¹⁶⁾ Another study had found that AAS users often do not consider use of these supplements as a pathological concept, and may even perceive AAS as a positive athletic life style⁽¹⁷⁾. A study conducted by Hildebrandt *et al.* related the rises in the use of AAS despite the risk, to an interesting benefit in spite of the possibility of negative health consequences⁽¹⁸⁾.

Mood changes when considered in the current study revealed a significant difference between users and non-users, this result agrees with the survey of male users versus non-users of AAS conducted by Ip Ej *et al.* in California that revealed that AAS users were more likely than non-users to meet criteria for mood disorder and an anxiety disorder.⁽¹⁹⁾ The mood changes in the current study were increasing with time of use and are consistent with D' Errico *et al.* study that was conducted in Italy and noticed that the chronic use of AAS has been known to cause serious adverse effect⁽²⁰⁾

The current study figured out that the knowledge regarding the correct use of these materials is not increasing with age and no significant difference had been demonstrated. More than half of the users do not have enough knowledge about AAS, Among those who had knowledge: coach was the most accountable source of the knowledge, while friends, doctors, sport magazine net and T.V, contribute to the other part, this disagrees with a survey of anabolic steroid used in weight lifters and body builders which revealed that literatures (books, magazines) and web sites were the main sources of information⁽²¹⁾

Slightly less than one quarter of the users had no ability to stop these supplements; this was an important indicator regarding the future dependence on these supplements. A study conducted in Belmont by Kanayama *et al.* demonstrated that AAS dependence may be a rising public health problem in future years, but remains a little studied.⁽²²⁾

In conclusion, most of the gym attendees were young and most of them used anabolic supplements. Although they know about the risk of these supplements still they use them and some found it difficult to stop them. It is recommended to start a community-based health education program to increase the knowledge about the use of these materials.

References:

1. Venâncio D P, Tufik S, Garbuio S A, da Nóbrega A C L, de Mello M T. Effects of anabolic androgenic steroids on sleep patterns of individuals practicing resistance exercise. *European journal of applied physiology*, 2008; 102: 555-560.
2. Greg A Rosenfeld, Chang A, Paulin M., *et al.* Cholesteric jaundice and acute kidney injury and pancreatitis secondary to Methadrenselon. *Journal of Medical Case Reports*, 2011;5(1):138
3. Hausmann, R. Long-Term Effects of Anabolic-Androgenic-Steroid Abuse: Morphological Findings Associated With Fatal Outcome. *Forensic pathology reviews*, 2005; 273-289.
4. Daher E F, Silva Júnior G B, Queiroz A, Ramos L M, Santos S Q, Barreto D M, *et al.* . Acute kidney injury due to anabolic steroid and vitamin supplement

- abuse: report of two cases and a literature review. *International urology and nephrology*, 2009; 41: 717-723.
5. Melnik B, Jansen T, Grabbe, S. Abuse of anabolic-androgenic steroids and bodybuilding acne: an underestimated health problem. *JDDG: Journal der Deutschen Dermatologischen Gesellschaft*, 2007; 5(2): 110-117.
 6. Hickson R C, Czerwinski S M, Falduto M T, Young A P. Glucocorticoid antagonism by exercise and androgenic-anabolic steroids. *Medicine and science in sports and exercise*, 1990; 22(3): 331-340
 7. Barrett-Connor E L.. Testosterone and risk factors for cardiovascular disease in men. *Diabetes & metabolisme*, 1995; 21(3): 156-161.
 8. Yamamoto Y, Moore R, Hess H A, Guo G L, Gonzalez F J, Korach K S *et al.* Estrogen receptor α mediates 17α -ethynylestradiol causing hepatotoxicity. *Journal of Biological Chemistry*, 2006; 281(24):16625-16631.
 9. De Piccoli B, Giada F, Benettin A, Sartori F, Piccolo E.. Anabolic steroid use in body builders: an echocardiographic study of left ventricle morphology and function. *International journal of sports medicine*, 1991; 12(04): 408-412.
 10. Leifman H, Rehnman C, Sjöblom E, Holgersson S. Anabolic androgenic steroids—use and correlates among gym users—an assessment study using questionnaires and observations at gyms in the Stockholm region. *International journal of environmental research and public health*, 2011; 8(7): 2656-2674.
 11. Parkinson A B, Evans N A. Anabolic androgenic steroids: a survey of 500 users. *Medicine & science in sports & exercise*, 2006;38(4): 644-651.
 12. Kanayama G, Brower K J, Wood R I, Hudson J I, Pope Jr H G. Anabolic–androgenic steroid dependence: an emerging disorder. *Addiction*, 2009; 104(12): 1966-1978.
 13. Sahraian M A, Mottamedi M, Azimi A R, Moghimi B. Androgen-induced cerebral venous sinus thrombosis in a young body builder: case report. *BMC neurology*, 2004; 4(1): 1-6.
 14. Nilsson S, Baigi, A., Marklund B, Fridlund B. The prevalence of the use of androgenic anabolic steroids by adolescents in a county of Sweden. *The European journal of public health*, 2001; 11(2): 195-197.
 15. Cohen J, Collins R, Darkes J, Gwartney D. A league of their own: demographics, motivations and patterns of use of 1,955 male adult non-medical anabolic steroid users in the United States. *Journal of the International Society of Sports Nutrition*, 2007; 4(1):12.
 16. Pope Jr H G, Kanayama G. Bodybuilding’s dark side: Clues to anabolic steroid use. *Current Psychiatry*, 2004; 3(12):1-8.
 17. Kanayama G, Brower K J, Wood R I, Hudson J I, Pope Jr H G. Treatment of anabolic–androgenic steroid dependence: Emerging evidence and its implications. *Drug and alcohol dependence*, 2010; 109(1-3): 6-13.
 18. Hildebrandt T, Yehuda R, Alfano L. What can allostasis tell us about anabolic–androgenic steroid addiction?. *Development and psychopathology*, 2011;23(3): 907-919.
 19. Ip E J, Barnett M J, Tenerowicz M J, Perry P J. The Anabolic 500 survey: Characteristics of male users versus nonusers of anabolic-androgenic steroids for strength training. *Pharmacotherapy: The journal of human pharmacology and drug therapy*, 2011;31(8): 757-766.
 20. D’Errico S, Di Battista B, Di Paolo M., Fiore C, Pomara C. Renal heat shock proteins over-expression due to anabolic androgenic steroids abuse. *Mini Reviews in Medicinal Chemistry*, 2011; 11(5): 446-450.
 21. Perry P J, Lund B C, Deninger M J, Kutscher E C, Schneider J. Anabolic steroid use in weightlifters and bodybuilders: an internet survey of drug utilization. *Clinical Journal of Sport Medicine*, 2005;15(5): 326-330.
 22. Kanayama G, Hudson J I, Pope Jr, H. G. Illicit anabolic–androgenic steroid use. *Hormones and behavior*, 2010;58(1): 111-121.