

# Evaluation of knowledge, attitude and use of dietary supplements among people exercising in the gym in Sharjah- United Arab Emirates

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## Abstract

This study evaluated the prevalence of use of dietary supplements by people exercising in gymnasiums in Sharjah. We also assessed participant's knowledge and attitude towards dietary supplements. A cross sectional survey was employed by designing a questionnaire that was pre-validated and distributed during the period of September-November 2017 in various gymnasiums in Sharjah-United Arab Emirates. Sixty-five (61.9%) males and 40 (38.1%) female participants filled in the questionnaire. Fifty-two (49.5%) males and 13 (12.4%) females admitted using dietary supplements. Only 14 (13.3%) respondents used performance enhancing drugs (PEDs), where 12 (85.7%) and 2 (14.3%) were males and females respectively. Participants believed in the safety of dietary supplements and used them. The main source was the pharmacy and most participants reported that they were introduced to supplements by their trainers. The overall results suggest that there is an urgent need to educate the public of responsible use of dietary supplements and the danger of anabolic steroids. It is also essential to set regulations that force trainers to go through similar educational programs.

## Introduction

There are several gyms in every city of the United Arab Emirates (UAE) and the number of people exercising for various reasons is large and progressively increasing. Such a trend in the behavior of the young generation is assuring and it needs to be encouraged. Athletes, exercising people and even children use sport supplements to enhance their performance [1]. Dietary supplements include vitamins, proteins, minerals, amino acids, herbs. Natural food products or combination of any of these ingredients are used to enhance the nutritional content of diet and defined by the Dietary Supplement Health and Education as substance added to the diet, which can contain one or more ingredients to complete the needs of an athlete [2]. Athletes also use dietary supplements for various reasons, mostly they use ergogenic aids, which can be any nutritional, physical, physiological or pharmacological method such as sports drink, minerals, caffeine, coenzyme q10, in order to boost their physical work and performance [3]. Responsible energy and nutrient intakes may enhance athletic performance anywhere from 6% to 20% [4]. It has been estimated that the prevalence rates of supplement use among athletes range from 32% to as high as 90%, however, increased energy requirements are not properly met in young athletes, especially during competition periods [5]. Dietary supplement and performance enhancing drugs (PEDS) can provide an easy way to improve health and build muscles mass. In addition, injury prevention and enhanced recovery are also important benefits of using sports supplements [6]. There is increase of the sales of nutritional supplements that reflects an increase in their consumption with the possible exposure to serious health consequences among the athletes [7]. It has been stressed that irrational use of supplements can have a negative impact on performance particularly when inappropriate selection of nutritional supplement is made due to inadequate knowledge and believed misconceptions [8]. The problem of lack of proper information and the consequent erroneous choice of dietary

supplements by exercising people is aggravated by the fact that some trainers in gyms who actually have more influence on trainee regarding supplement use [9] as they themselves may not have adequate level of information on nutritional supplements. Due shortage of studies on such an important health issue in UAE, the present study was undertaken to assess the knowledge, attitude and practice of nutritional supplements among people exercising in gymnasiums in Sharjah- UAE.

## Materials and methods

The present investigation was a cross-sectional study carried out in the Emirate of Sharjah-UAE, from September to November 2017.

## Selection of population

Inclusion criteria were based on selecting people of various age groups exercising in the gym for various personal reasons. All participants were informed about the objectives of the study and signed a formal consent form. The study was approved by the Ethics Committee of the University of Sharjah, UAE.

## Questionnaire design

A cross sectional survey was employed by designing a questionnaire that was distributed during the period of September-November 2017

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in various gymnasiums in Sharjah-United Arab Emirates. Initially, the questionnaire was pre-validated by distributing it to ten athletes, their comments and recommendations were taken into consideration in the final version of the questionnaire but they themselves were not included in the study. The questionnaire was set in English and distributed at popular gyms across Sharjah-UAE.

The administered questionnaire consisted of twenty-eight questions, divided into four main parts. The first part included questions concerning demographic characteristics of the participants such as age, gender, and ethnicity and education level.

The second part dealt with sports-related aspects such as general gym habits and training, how long each athlete has been training and their main goal of exercise, whether they believe that supplements are safe to use and how knowledgeable they are on general sports supplements. The third part of the questionnaire consisted of questions related to supplement use. This section covered questions on the sources of information on sports nutrition, the motivations for the use of nutritional supplements, as well as the types of supplements used and the duration and timing of their consumption. Participants also answered questions on the adverse effects they might have experienced. The fourth and final section concluded with information about PEDs and steroid use among the participants. We also inquired about how safe they believe PEDs are and the types of steroids and PEDs used.

**Statistical analysis**

Statistical analyses were conducted using SPSS software (version 11.5 SPSS, Chicago, Ill).

All variables were categorical. Descriptive analyses were based on frequencies and percentages. Pearson chi-square test was used to identify associations of supplement intake status (user/nonuser) with demographic characteristics of the participants.

**Results**

A total of 105 athletes were approached and agreed to participate in the study. Table 1 shows the demographic characteristics of the participants in this survey. Respondents were males (65, 61.9%) and females (40, 38.1%). The majority (75, 71.4%) of participants were in the age group of 22-40 years, and (27, 25.7%) were in the age group of 16-21 years. Again, most (80, 76.2%) of the participants were holders of a university degree. Table 2 shows that the reasons of respondents going to the gym to train were to look/feel better (74, 70.5%), to lose weight (30, 28.6%), for body building (23, 21.9%) and finally to gain a professional career (12, 11.4%). More males than females used the dietary supplements, believe that they are safe to use and observed improvement in their health. Also shown in Table 2, responses to how frequently participants do exercise, whether the use dietary supplements and have they noticed any side effects upon their use. Table 3 Shows that only few respondents of males and females have used PEDs or anabolic steroids, but the majority believes that they are more dangerous to health than common dietary supplements. Reasons for using dietary supplements, their various types and where they are purchased from are shown in Table 4. The majority used dietary supplement such as protein powder, BCAA, multivitamins and fish oil for better performance, improve physical appearance and health and accelerate recovery. The pharmacy was the main source for purchasing dietary supplements and the majority was introduced to their use by their trainers.

Ethnicity, years of exercising and education level were not significantly associated with the knowledge of participants that

metabolic steroids or PEDs are more dangerous than other common dietary supplements like powdered proteins or BCAA. More of the holders of a university degree do not use dietary supplements (P < 0.037) and mostly exercise for bodybuilding (P < 0.032). On the other hand, Middle Eastern participants were significantly (P < 0.028) more into exercising for a professional career than other ethnic groups. Participants of the 22-40 years of age were significantly (P < 0.021) more users of dietary supplements than those of other age groups but never used steroids or PEDs drugs (P < 0.009). Participant of the same age group (22-40) were keener on exercising to improve recovery (P < 0.031), for better performance (P < 0.015), to enhance physical appearance (P < 0.045) and were more users of powdered protein (P < 0.014) and BCAA (P < 0.002).

**Discussion**

In the present study, more males than females were exercising with the majority being of Middle Eastern origin and holders of a university degree. Again, most of them were of age ranging from 22 to 40 years. These results may indicate that individuals within this age range and with such a level of education are more active and more aware of the health benefits of exercising than their counterparts of other age groups and levels of education. This view may be substantiated by results reported for Lebanon [10] and Saudi Arabia [11] where most exercisers were of similar educational level having university bachelor's degrees. Male participants seem to continue training for longer periods than females and are more interested in training for bodybuilding and to secure a professional athletic career. This trend is logical when considering traditional and cultural differences from those of Western females. Such a point is supported by the observation that, with the exception of the above-mentioned purpose for exercising, no significant difference was observed between genders who exercise to lose weight or look and feel better. Results of the present study are in agreement with those of earlier reports where significantly more male than female participants use dietary supplements and believe they are safe to use. The prevalence of use of dietary supplements in our study for both genders comprises 61.9%. Such prevalence is higher than 36.3%-39.8% reported for Lebanon, Saudi Arabia, Brazil and UAE [10-13] but much lower than (81% and 89%) reported for Finland and USA [14,15]. Moreover, our

**Table 1.** Demographic characteristics of participants

Characteristic	Frequency (%) N=105
<b>Gender</b>	
Male	65 (61.9%)
Female	40 (38.1%)
<b>Ethnicity</b>	
Middle east	85 (81%)
African	7 (6.7%)
Hispanic	7 (6.7%)
Caucasian	6 (5.7%)
<b>Age</b>	
16 – 21	27 (25.7%)
22 – 40	75 (71.4%)
41 – 60	2 (1.9%)
Above 60	1 (0.95%)
<b>Educational level</b>	
Pre - high school student	1 (0.95%)
High school student	3 (2.8%)
High school graduate	5 (4.8%)
Diploma	5 (4.8%)
Bachelor’s degree	80 (76.2%)
Masters/PhD	11 (10.5%)

**Table 2.** Responses of participants to questions on period and purpose of exercising and use of dietary supplements and their influence on health status

Questions	Frequency (%), n=105		Chi square test P < 0.05
	Males	Females	
<b>How long have you been exercising?</b>			
less than a year	13 (44.8%)	16 (55.2%)	< 0.001
1 - 3 Years	21 (50%)	21 (50%)	
3 - 5 Years	12 (92.3%)	1 (7.7%)	
5 Years and more	19 (90.5%)	2 (9.5%)	
<b>For what purpose do you go to the gym?</b>			
Look/feel better	41 (55.4%)	33 (44.6%)	< 0.001
Lose weight	15 (14.3%)	15 (14.3%)	
Bodybuilding	21 (20%)	2 (1.9%)	
Professional career	10 (9.5%)	2 (1.9%)	
<b>In your opinion, are dietary supplements safe to use?</b>			
Yes, they are	45 (80.4%)	11 (19.6%)	< 0.001
No they are not	13 (43.3%)	17 (56.7%)	
I do not know	7 (63.8%)	12 (63.2%)	
<b>Have you ever used any gym/dietary supplements?</b>			
Yes	52 (80%)	13 (20%)	< 0.001
No	13 (32.5%)	27 (67.5%)	
<b>How frequently do you use dietary supplements?</b>			
Every day	16 (80%)	4 (20%)	< 0.001
Only when I workout	36 (90%)	4 (10%)	
Once or twice a week	4 (80%)	1 (20%)	
A few times a month	2 (15.4%)	11 (84.6%)	
<b>Have you noticed any difference in your general health after using supplements?</b>			
Yes	53 (85.5%)	9 (14.5%)	< 0.001
No	5 (31.2%)	11 (68.8%)	
<b>Have you ever experienced any side-effects caused by supplements?</b>			
Yes	11 (91.7%)	1 (8.3%)	0.14
No	47 (71.2%)	19 (28.8%)	

**Table 3.** Responses of male and female participants to questions on use of steroids and Performance enhancing drugs (PEDs)

Questions	Frequency (%), n=105		Chi square test P < 0.05
	Males	Females	
<b>Have you ever used metabolic steroids or PEDs?</b>			
Yes	12 (11.4%)	2 (1.9%)	0.24
No	45 (42.9%)	19 (18.1%)	
<b>In your experience, do you find that PEDs give better results than common supplements?</b>			
Yes	12 (11.4%)	1 (0.95%)	0.10
No	1 (0.95%)	1 (0.95%)	
<b>In your opinion, are metabolic steroids or PEDs more dangerous than common supplements?</b>			
Yes	57 (54.3%)	32 (30.5%)	0.29
No	8 (7.6%)	8 (7.6%)	

results show that males exercise for longer periods and are more users of dietary supplements than females. This contradicts with earlier observations in Ajman gymnasiums UAE [12]. However, our results support the results reported in Saudi Arabia [11], where use of dietary supplements was found to be higher among males than females. It is worth noting that raining for longer periods has been associated with more consumption of dietary supplements [13].

Supplements are used for various purposes. In the present study, the most commonly used supplements include protein powder (54.3%), BCAA (44.8%), multivitamins (35.2%), fish oil (31.4%), protein bar (21.9%) and energy drinks (21.0%). These results are similar to findings reported for dietary supplements taken by people exercising in the gymnasium whether they are professional athletes [11] or

exercising to improve their health and looks [10]. Similar to the reasons for exercising presented in the Saudi study [11], the majority of our respondents use supplements for better performance, to enhance their physical appearance, improve health, and improve recovery and to prevent injury. Dietary supplement use may be irrational if the exerciser is having healthy diet and meal replacements should not occur without the advice of a physician or dietitian [16]. It has also been stressed that a well-balanced diet is sufficient for a person's protein requirement [17]. In the present study, participants were introduced to supplements by their coach or through the internet and the main source of purchasing these agents were the pharmacy and the internet. It seems strange that participants did not consider physicians and pharmacists as main sources of information. These observations are consistent with those illustrated in the Saudi study [11]. In the latter study, the authors

**Table 4.** Reasons and types of dietary supplements used by participants

Questions	Frequency (%), n=105
<b>What is the main reason you use dietary supplements?</b>	
Better performance	54 (51.4%)
Enhance physical appearance	38 (36.2%)
Improve health	33 (31.4%)
Improve recovery	33 (31.4%)
Prevent injury	12 (11.4%)
<b>What are the dietary supplements you usually use?</b>	
Protein powder	57 (54.3%)
BCAA	47 (44.8%)
Multivitamins	37 (35.2%)
Fish oil	33 (31.4%)
Protein bar	23 (21.9%)
Energy drink	22 (21.0%)
Creatine	13 (12.4%)
Carbohydrates	10 (9.5%)
Minerals	8 (7.6%)
Herbals	5 (4.8%)
Others	7 (6.7%)
<b>Where do you usually buy your dietary supplements?</b>	
Pharmacy	45 (42.9%)
Online store	19 (18.1%)
Trainer at gym	3 (2.9%)
Nutritionist	14 (13.3%)
<b>How were you introduced to supplements and where do you get the information you require when using them?</b>	
Coach	35 (33.3%)
Physician	1 (1%)
Pharmacist	3 (2.9%)
Online	24 (22.9%)
Nutritionist	12 (11.9%)
Sport magazine	3 (2.9%)

considered that information obtained from coaches or the internet unreliable. It has been suggested that supplement users may not be aware of the objective recommendations for protein intake and the general population may perceive their needs to be as excessively high as those of athletes and since their workload is less their daily protein intake should be in line with athlete’s guidelines or even less [18]. On the other hand, use of metabolic steroids and PEDs was admitted by only small number of our respondents who believed that these agents produce better results than common dietary supplements. However, the majority of participants in the present study believed that steroids and PEDs are more dangerous to health than common supplements.

Our observations and those of others stress on the need to educate both coaches and exercisers and increase the awareness of the public to the importance of consulting a physician, pharmacist or dietician before using dietary supplements. Enforcement of gymnasiums to have posters, brochures and leaflets with instructions, recommendations and warnings on the use of dietary supplements may greatly promote a rational and responsible use of such agents.

**Limitations of the study**

The main limitation of this study was the small sample size particularly with regard to female participants, the majority of females in the United Arab Emirates would prefer using a female only gym that

we could not access and female exercisers were reluctant to participate in the survey.

**Conclusion**

The findings of this study are consistent with those of other studies carried out elsewhere. Knowledge of participants of dietary supplements and their attitudes towards such products and the hazards of steroids and PEDs seem to be reasonable. However, the irrational use of dietary supplements should be discouraged. The need for advice and guidance through consultation with healthcare professional is essential. Awareness programs to increase public awareness and promote responsible use of dietary supplements should include direct means of interventions. These could be achieved through regulations and bylaws of concerned authorities to force gymnasiums to publish posters, leaflets and brochures with the benefits and risks of using supplements. Trainers should also be educated of such aspects, gymnasiums, and sport centers.

**Conflict of interest**

The authors declare no conflict of interest.

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