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Knowledge of Gym Attendees about the Safety of Dietary Supplement

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Abstract

Introduction: Dietary supplements are substances used to resolve a specific nutritional deficiency. **Objective:** study the most common types of dietary supplement used by gym attendees and asses the knowledge about the side effect of these enhancements.

Methodology: The data was collected by using the predesigned questionnaire from 163 participant by a digital survey using Google Forms service and shared the survey in a lot of gym communities on social media.

Results: There were highly significant differences between the study participants in the consumed supplements in which proteins come in the first place (93.25%). Among many reasons for supplements use there were 4 reasons mentioned by participants. The most common reason is bodybuilding reported by 83.44% of study participants which is differ significantly from other reasons. The study members were mostly aware about weight gain (73.62%) and increase urination (55.22%) as aside effects of dietary supplements with highly significant differences in each side effect ($P \leq 0.01$).

Conclusion: The dietary supplements widely used by the population attend gyms. Proteins were found to be mostly used. The most common reason for use the dietary supplement was bodybuilding. The study members were unaware about the most of the dietary supplements side effects which in turn augment the need for more educational programs by health authorities.

Keywords: Gym Attendees; Knowledge; Safety; Dietary supplements; Vitamins

1. Introduction

Dietary supplements defined as substances used to resolve a specific nutritional deficiency. They are often sold as ergogenic substances that can improve or increase athletic performance (1).

They can be formulated as tablets, capsules, soft gels, gel caps, powders, or liquids (2). These supplements are mainly used by athletes (3). The most frequent dietary supplements used by athletes are sports drinks, multivitamins and minerals, proteins, and amino acids (4). Many reasons mentioned by athletes for the use of dietary supplements such as increase in strength, performance improvement, prevention of nutritional deficiencies, enhancement of overall health and improvement in immune system (5). The professionals depend on many aspects such as safety, efficacy and regulations to recommends the dietary supplements for consumers (6-9). This study aimed to study the types of most commonly used supplements by gym attendees, to ascertain the main reasons for using these enhancements, and asses the knowledge about the side effect of dietary supplements.

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2. Methodology

2.1. Study design

This was a cross-sectional study; The data was collected by using the predesigned questionnaire. Almost all of the questions were close ended. The information was collected from 163 (17-48 years) participant by a digital survey using Google Forms service and shared the survey in a lot of gym communities on social media. The digital surveys collected from different cities in Iraq.

The questionnaire comprised five main sections: first, sociodemographic data including age, BMI, and Education state; second, data on the participant's practice regarding duration and frequency of exercise and does the participant follow special diet or not; third, questions about types of nutritional supplements and hormones available; fourth, reasons for using nutritional supplements and hormones; and finally, knowledge of participant about the side effect of nutritional supplements. Possible known side effects of nutritional supplements were listed, and the participants were asked to give their opinions as follows: Yes = it is a possible side effect, No = it is not a side effect or I do not know.

2.2. Statistical analysis

The statistical Analysis System- SAS (2018) program was used. Means and standard deviations (SDs) used as descriptive analysis for continuous variables and frequencies. Percentages used for categorical variables. Chi-square test was used to compare between percentages.

3. Results

Regarding sociodemographic characteristics of study participants there were highly significant variations in all the aspects which include the basic characteristics (Age, BMI, education state and special diet) of the study patients as presented in table (1)

Table 1 Main sociodemographic characteristics

Variable		**Study participants**		**P-value**
Age (years)		27.71 ± 6.59		--
Body mass index (BMI) kg/m^2		28.46 ± 7.56		--
		N	%	
Age Groups	10 – 19 years	6	3.68 %	0.0001 **
	20 – 29 years	106	65.03 %	
	30 – 39 years	37	22.70 %	
	40 – 49 years	14	8.59 %	
Education	Intermediate	8	4.91 %	0.0001 **
	High school	79	48.47 %	
	Bachelors	70	42.94 %	
	Master	2	1.23 %	
	Above master	4	2.45 %	
Special diet	Yes	101	61.96 %	0.0001 **
	No	62	38.04 %	

Data presented as mean, number and percentage. ** (P≤0.01): Highly significant.

As shown in table 2 most of gym attendees in this study exercised 3-5 days /week and most of them have a duration of exercise that reached 1- 2 hr. per day which is the recommended duration in the gyms of Iraq (P≤0.01). The total period of exercise between 1-3years reported for more than 60% of study participants comparing with less than one month in 1.23%. there was highly significant difference in the frequency, duration and total period of exercise (P≤0.01).

Table 2 Duration, frequency, and total period of exercise done by study participant

Variables		N	%	P-value
Frequency of exercise per week(days/week)	<3	8	4.91 %	
	3-5	110	67.48 %	0.0001 **
	>5	45	27.61 %	
Duration of exercise(hr)	<1 hr	26	15.95 %	
	1-2 hrs	119	73.01 %	0.0001 **
	>2 hrs	18	11.04 %	
Total period of exercise	<1 month	2	1.23 %	
	1-12 month	37	22.70 %	0.0001 **
	1-3 years	98	60.12 %	
	4-7 years	26	15.95 %	

Data presented as number and percentage (%). ** (P≤0.01): Highly significant.

Table 3 showed that there were highly significant variations between dietary supplements consumed by the study participants (P≤0.01) whereby the proteins gain the highest percentage among the supplements followed by vitamins and sport drinks.

Table 3 Types of dietary supplements used by the study participants

Nutritional supplements	N	%
Proteins	152	93.25 %
Vitamins	73	44.79 %
Sports drinks	47	28.83 %
Hormones	34	20.86 %
Steroids	15	9.20 %
Fat burner	12	7.36 %
Weight gain support	4	2.45 %
Others	8	4.91 %
P-value	---	0.0001 **

Data presented as number and percentage (%). ** (P≤0.01): Highly significant.

Table 4 showed that among many reasons for dietary supplements use there were 4 reasons mentioned by participants. The first and the most common reason is bodybuilding reported by 83.44% of study participants. The second reason was supplementation of inadequate diet reported by7.36%. Other participants use dietary supplements to improve their exercising performance (6.75%) or promote weight loss (2.45%). There were highly significant variations between the reasons (P≤0.01).

Table 4 Reasons for use of nutritional supplement among study participants

Reasons	N	%
Body building	136	83.44%
Supplementation of inadequate diet	12	7.36%
Improve performance	11	6.75%
Lose weight	4	2.45%
P-value	---	0.0001 **

Data presented as number and percentage (%). ** (P≤0.01): Highly significant.

Table (5) illustrated that majority of participants were un aware about the dietary supplements side effect, except for weight gain and increase urination, the awareness percentage were (73.62%, 55.22% respectively). highly significant differences in each side effect (P≤0.01).

Table 5 The knowledge of participants about the various side effects of dietary supplements

Side effect	N	%	P-value
Hypertension			
Yes	19	(11.66%)	
No	137	(84.05%)	0.0001 **
I don't know	7	(4.29%)	
Liver disease			
Yes	5	(3.07%)	
No	156	(95.70%)	0.0001 **
I don't know	2	(1.23%)	
Kidney disease			
Yes	15	(9.20%)	
No	142	(87.12%)	0.0001 **
I don't know	6	(3.68%)	
Weight gain			
Yes	120	(73.62%)	
No	36	(22.09%)	0.0001 **
I don't know	7	(4.29%)	
Gastric upset			
Yes	47	(28.83%)	
No	111	(68.10%)	0.0001 **
I don't know	5	(3.07%)	
Muscle pain			
Yes	40	(24.54%)	
No	120	(73.62%)	0.0001 **
I don't know	3	(1.84%)	
Increase urination			
Yes	90	(55.22%)	
No	69	(42.33%)	0.0001 **
I don't know	4	(2.45%)	
Allergy			
Yes	16	(9.81%)	
No	145	(88.96%)	0.0001 **
I don't know	2	(1.23%)	

Data presented as number and percentage (%). ** (P≤0.01): Highly significant.

4. Discussion

Generally, there are widely consumption for dietary supplements by the common non-athletic population due to increasing awareness regarding body image and aesthetics (9). This survey was done to check the usage and safety awareness of dietary supplements amongst the gym attendees in Iraq.

The study presented that the majority (65%) of study participate were young (20-29 years). This indicates the affinity of young population for fitness and aesthetics. People with high education like bachelors and high school represent the majority of participants with higher than 90% together. They are fully aware of what they take and capable of reading the ingredients and instruction of use, making this research valuable in knowing the causes of taking, the exact amount they take and the adverse effects of nutritional supplements and hormones. In similar to study by Alshammari *et al* in AL-Riyadh that founded that about 26% of study participant with high school degree and 65% with Bachelors (10). Another study in Brazil also founded that more than 90% of participants with education level more than 8 years (11).

Of course, the people with a special diet (61.96%) represent more than people with no diet because of the demands of the captains in gyms to especial diets. In similar, other study founded that 72% of gym attendance on special diets (8).

Majority of the study participants (73.01%) exerted the exercise for 1-2 hours, which is the most recommended duration in the gyms of Iraq. Also, the frequency of exercise was 3-5 day/week for 67.48% of study participant. In similar to a study by Alshammari *et al,* who founded that 77.5% of participants exert the exercise for 1-2 hours and frequency of exercise in 69.5% was 3-5 days / week (10). Other study showed that more than 70% of participants exerts the exercise for more than 8 hours/week in gyms (11). This mainly due to the recommendations of the captains in the gyms and most people doing exercise in the gym became addicted to it and could stay with it for long time.

The present study founded that 93.25% of participants used proteins supplements. This would be mainly due to that athletes frequently believed that increasing the muscle mass occur by consumption high amount of protein (12).

Vitamins used by (44.79%) of study participant. they believe that vitamins increase the immunity system and flushing the toxins from the body and help in the energy So, use of them is began to increase. Sport drinks were used by (28.83%) study participant, they believe that sport drinks helping them to increase their power.

Other studies conducted in AL- Riyadh and Beirut (10,13), founded that the most common type of nutritional supplement used was protein powder, whereas in the study of professional athletes and the study done in Tehran, sports drinks and vitamins were the most common (14,15). Other study by Antonino Bianco *et al*., in Italy reported that 24% of gym-going subjects consuming proteins and creatine simultaneously (16).

Kreider in his study has established the role of dietary supplements when combined with exercise in improving the muscle growth. He found the correlation between ingestion of these supplements with enhancement the anabolic hormonal profile and improvement the fat free mass growth (17).

The study founded that hormones were used by only (20.86%) of study participant because they have bad reputation between the people like do steroids (9.20%). Similarly, several studies recorded little use of hormones among athletes (10,18-21) the prevalence of hormone use in Saudi Arabia was (7.9%) (10), in Al Ain, UAE used by (22%) (18), and in Germany used by (13.5%) (19). However, the prevalence in this study was higher than that found in Trinidad and Sweden, both of which had a prevalence of 3%(20,21).

For steroid use, Studies from Western Europe and the UK suggested a prevalence of anabolic steroids use among male fitness center visitors of about 5-10% (22,23). other study in Porto Alegre reported use of anabolic steroids among 11% of gyms visitors (24). While in Sweden, use the anabolic steroid did not exceed (3%) (21).

Fat Berners not used widely because most people in Iraqi gym use supplements to increase body mass not to decrease fat.

Among many reasons for nutritional supplements use there were 4 reasons mentioned by participants. The first and the most common reason was bodybuilding that reported by (83.44%) of study participants. other study in Al-Ain, United Arab Emirates (18) founded that 64% of participants used the food supplement for body building. Among Brazilian athletes, 47.7% used the nutritional supplements and hormones for increase lean mass and body building (11). The second reason for use the nutritional supplement and hormones in the present study was supplementation of inadequate diet that reported by 7.36% of study participants.

Low percentage (6.75%) of the present study participants use nutritional supplements to improve their exercising performance to be able to exercise more efficiently. In contrast, other studies founded that 70.9% and 34.7% of athletes in Brazil and Saudi Arabia respectively, used nutritional supplement and hormones to improve their exercise performance (10,11). Although many studies have shown that individuals who exercise regularly in the gym hardly

need nutritional supplements, many participants believe that taking nutritional supplements plays a major role in their improvement (10,11,25,26).

A high percentage of participants in current study un aware that supplements can adversely affect health. These results were confirmed by Tian *et al.,* where 86.4% of athletes in Singapore were not familiar with the negative impacts of dietary supplements (27). El Khoury also reported that most of their study participants were unaware about the side effects of dietary supplements on health if inappropriately used (13).

Majority of trainers and coaches encouraging gym attendance to use dietary supplements and hormones without any medical guidance (9). El Khoury found that most of the trainers, coaches, and gym members had inadequate knowledge and unaware about the side effect of dietary supplements (13). This directs for need more studies on the knowledge base of gym coaches about dietary supplements and hormones.

5. Conclusion

Majority of study participants were young between 20-29 year. Most study participants exerted exercise for 1-2 hours and frequency of exercise per week was3-5days /week. The dietary supplements widely used by the population attend gyms. Proteins were found to be mostly used, followed by Vitamins and sport drinks. The most common reason for use the dietary supplement and hormones was bodybuilding. The study members were unaware about most the dietary supplements side effects in spite of using them regularly which in turn augment the need for more educational programs for the youth people who attend the gym regularly with more supervision by the health authorities.

Compliance with ethical standards

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Disclosure of conflict of interest

No conflict of interest to be disclosed.

Statement of informed consent

The samples were collected from the donors with informed verbal consent.

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