Evaluation of knowledge, attitude and use of dietary supplement and hormones among male gym attendees in Taif city, Saudi Arabia

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Abstract

Background: Nutritional supplements and hormones are used at a high rate throughout the world.

Objectives: to evaluate the prevalence of use of dietary supplement and hormones among gym attendees, and to assess participants' knowledge and attitude towards them.

Methods: A cross-sectional study was done on 338 gym attendees in Taif city. A self-administered questionnaire was used. It included items on their sociodemographic characters, their exercise history, and their use of any nutritional supplements or hormones.

Results: About 30% of the participants (29.6%) used nutritional supplements or hormones, and the most commonly used were protein powder (22.5%) and vitamins (13.6%). Among them, 11.2% agreed on hypertension, 28.7% agreed on liver disease, 35.5% agreed on weight gain, and 40.2% agreed on kidney disease as a side effect of supplements. For hormones, 21.3% agreed on hypertension, 22.2% agreed on diabetes mellitus, 39.1% agreed on weight gain, and 21.1% agreed on vision problems as a side effect of their use. Of the participants, 35.8% agreed that psychiatric problems are side effects, 25.4% agreed on testicular hypotrophy, and 37.9% agreed on breast enlargement. A non-significant relationship was found between the participants' level of education and both their use of any nutritional supplements or hormones, and source of information, and the majority of those who were not using nutritional supplements or hormones (79.5%) were not using a special diet.

Conclusion: All gyms attendees should consult a healthcare professional before the use of hormones or nutritional supplements, and gym coaches should be educated regarding hormones and nutritional supplements.

Key words: knowledge, attitude, supplement, hormones, gym, Taif

Introduction

The concept of body image is now becoming a trend that is increasing with the influence of media. Thus, there is growing awareness about appearance [1]. To achieve the desired body image, it is essential to have a good diet, sufficient rest and an active exercise program [2]. Some athletes and exercising people use dietary supplements to improve their performance [3].

Nutritional supplements are divided into food components, for example protein, and non-foods, or pharmaceutical preparations, for example vitamins and minerals capsule or tablet, supplying one or more nutrients in a concentrated form including proteins, minerals, vitamins, trace elements, and other components that are theoretically present in a normal and balanced diet [2].

Nutritional supplements are usually present in an untypical form of food, including tablets, capsules, powders, or pills [4]. People use dietary supplements for many reasons: increasing the whole body fat-free mass (i.e., body building) [4], general improvement of health [4], enhancement of energy and general performance [5], and avoidance of specific diseases [6].

These supplements may also have their liabilities with short and long-term side effects [7]. Short term side effects can include: digestive problems, headache, muscle cramping etc. Long term side effects are reported as: cardiovascular problems, kidney stones, kidney failure, gout etc [8]. Unfortunately about 55% of dietary supplement users are consuming them without any professional guidance [9].

A study conducted in Riyadh, Saudi Arabia to investigate prevalence and patterns of the use of protein supplements among gym users, revealed that 28% of the general population of gym users use more than the recommended dose of protein supplements compared to 9% of medical students who are gym attendees and previous studies have indicated that 1.4-2.0g/kg/day is the amount needed for a physically active individual [10].

A study in Beirut, Lebanon, showed that the prevalence of nutritional supplement use was 36.3% among fitness club participants and the supplement most commonly consumed by the participants was protein powder [11]. In the United States, more than 3 million people were reported to be using or to have used ergogenic supplements [12]. Compared with other countries, Saudi Arabia had a lower prevalence of hormone use (7.9%) than was found in Al Ain, UAE (22%), [13] and in Germany (13.5%). [14] However, the prevalence in this study was higher than that found in Trinidad and Sweden, both of which had a prevalence of 3% [15,16].

Different rates of the use of nutritional supplements and hormones have been reported throughout the world. However, limited data are available on the prevalence of their use by regular gym members in Taif city, Saudi Arabia. Thus, this study aimed to assess the knowledge and attitude toward nutritional supplement intake among gym attendees in Taif city. The aims of the present study were to evaluate the prevalence of use of dietary supplement and hormones among gym attendees, and to assess participant's knowledge and attitude towards dietary supplements and hormones.

Subjects and methods

Study design: A cross-sectional study was done in the period from February to May 2019.

Study settings: All gyms in Taif city; three gyms were chosen randomly named: fitness time gym, golden gym, and super – training gym.

Sampling methodology: The inclusion criteria were all gym members who were in the gym at the time of survey and who were above 18 years old. The exclusion criteria were female gyms.

Study instrument: A self-administered questionnaire was distributed to all respondents in the chosen gyms in Taif city. The questionnaire included items on the participant's age, educational level, smoking status, weight, and height. It included questions on the total period of exercise, frequency of exercise per week, duration of daily exercise, following a special diet, use of any nutritional supplements or hormones and their type, the main reason they use dietary supplements, the way the users were introduced to supplements and where they get their information, and their opinions regarding the side effects of the used supplements and hormones. The response rate was 63.2% and 338 gym attendees were the study participants.

Ethical considerations: Ethical approval was obtained from the college of medicine research ethical committee at Taif University, Saudi Arabia. Verbal and written consent was obtained from all participants after explaining the aim and nature of the study.

Data analysis: Data was analyzed by the Statistical Package for Social Sciences (IBM SPSS statistics 26). Descriptive data was presented as numbers and frequencies.

Results

Table 1 shows that 72.5% of the participants were of an age ranging from 18-25 years; most of them (54.4%) had a bachelor's degree, and 75.7% were non-smokers. Most of the studied participants had a normal weight (53.6%).

Of the participants, 47% started practicing exercises for less than one month prior to the study, 37.3% practice exercises for 3-5 times/ week, 52.7% practice it for 1 to < 2 hours, and 30.8% were following a special diet (Table 2).

About 30% of the participants (29.6%) were using nutritional supplements or hormones (Figure 1), and the most commonly used were protein powder (22.5%) and vitamins (13.6%) (Figure 2). When nutritional supplements or hormone users were asked about the reason for use, the most common reason was body building (21.6%) followed by the desire to prevent diseases (9.2%) (Figure 3).

Figure 4 shows that 13.6% were introduced to supplements and got the information they required when using it, from online websites, 12.7% from their coach, and 5.6% from a nutritionist.

Table 3 shows that according to the attitude of the participants towards the side effects of supplements, 11.2% agreed on hypertension, 28.7% agreed on liver disease, 35.5% agreed on weight gain, 40.2% agreed on kidney disease, 24.6% agreed on allergy, 36.75 agreed on gastric upset, and 16.9% agreed on muscle pain.

According to the attitude of the participants towards the side effects of hormones, 21.3% agreed on hypertension, 22.2% agreed on diabetes mellitus, 39.1% agreed on weight gain, and 21.1% agreed on vision problems. Of the participants, 35.8% agreed that psychiatric problems are side effects, 25.4% agreed on testicular hypotrophy, 37.9% agreed on breast enlargement, 18% agreed on increased RBC, and only 0.3% agreed on prostatic hyperplasia (Table 4).

A non-significant relationship was found between the participants' level of education and both their use of any nutritional supplements or hormones, and source of information (p= >0.05) (Figures 5 and 6). On the other hand, a highly significant difference was found between following a special diet and the use of any nutritional supplements or hormones, as the majority of those who were not using nutritional supplements or hormones (79.5%) were not using a special diet (p= < 0.001).

Table 1: Distribution of the studied participants according to their age, education, smoking status, and BMI (No.: 338)

Variable	No. (%)
Age group (years):	
18-25	245(72.5)
26-30	48 (14.2)
31-40	25(7.4)
>40	20 (5.9)
Education:	
Intermediate	7 (2.1)
High school	139 (41.1)
Bachelor's	184 (54.4)
Master's	6 (1.8)
Above master's	2(0.6)
Smoking status:	
Smoker	82 (24.3)
Nonsmoker	256 (75.7)
Body mass index (BMI):	
Underweight (<18)	34 (10.1)
Normal weight (18-24.99)	181 (53.6)
Overweight (25-29.99)	62 (18.3)
Obese I (30-34.99)	37 (10.9)
Obese II (35-39.99)	16 (4.7)
Obese III (>40)	8 (2.4)

Table 2: Distribution of the studied participants according to the period they started to exercise, frequency and duration of exercise and following a diet

Variable	No. (%)
Total period of exercise	
- <1 month	159 (47)
- From 1 month to 6 months	87 (25.7)
- From 7 months to a year	15 (4.4)
- More than year	77 (22.8)
Frequency of exercise per week	
- <3 times	142 (42)
- 3-5 times	126 (37.3)
- >5 times	70 (20.7)
Duration of exercise	
- <1 h	144 (42.6)
- 1-<2h	178 (52.7)
- >2h (.....)	16(4.7)
Following special diet	
- Yes	104 (30.8)
- No	234(69.2)

Figure 1: Distribution of the studied participants according to the usage of any nutritional supplements or hormones

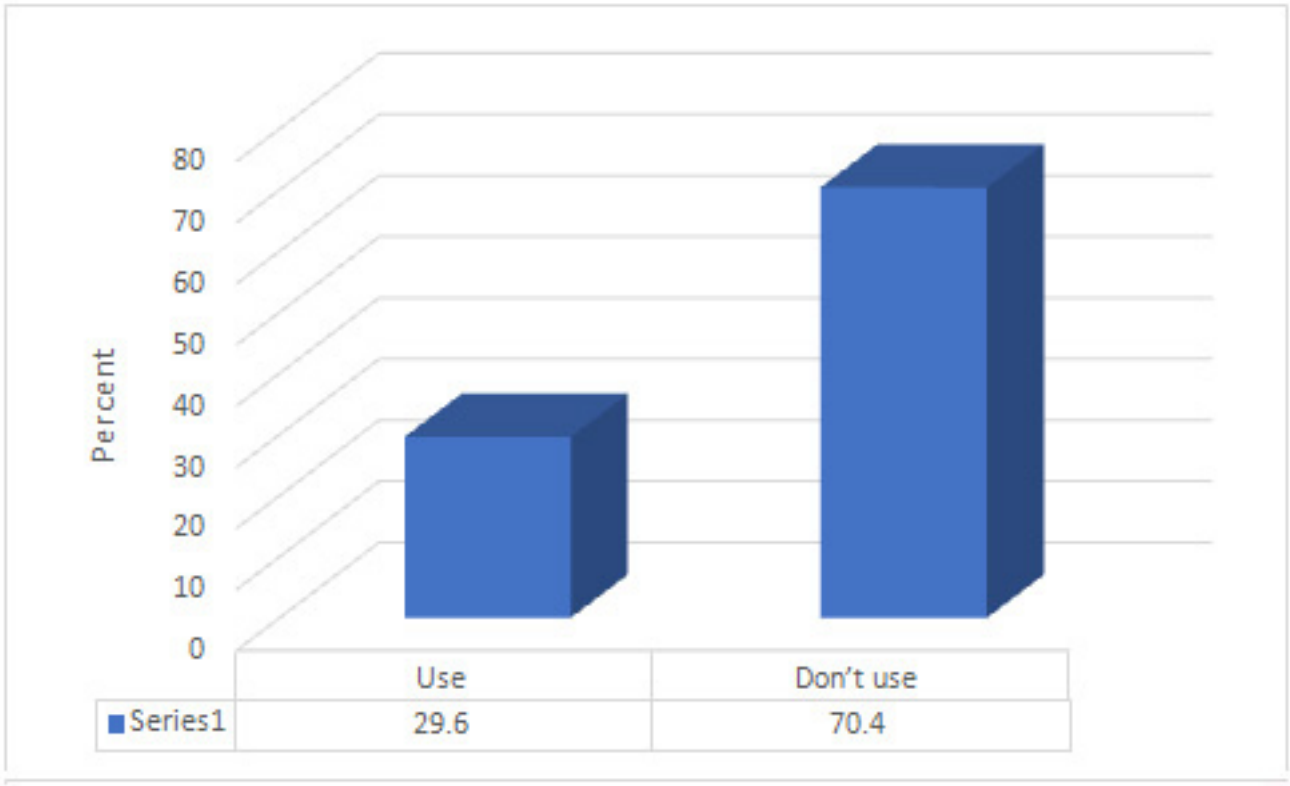


Figure 2: Distribution of the studied participants according to type of used supplements

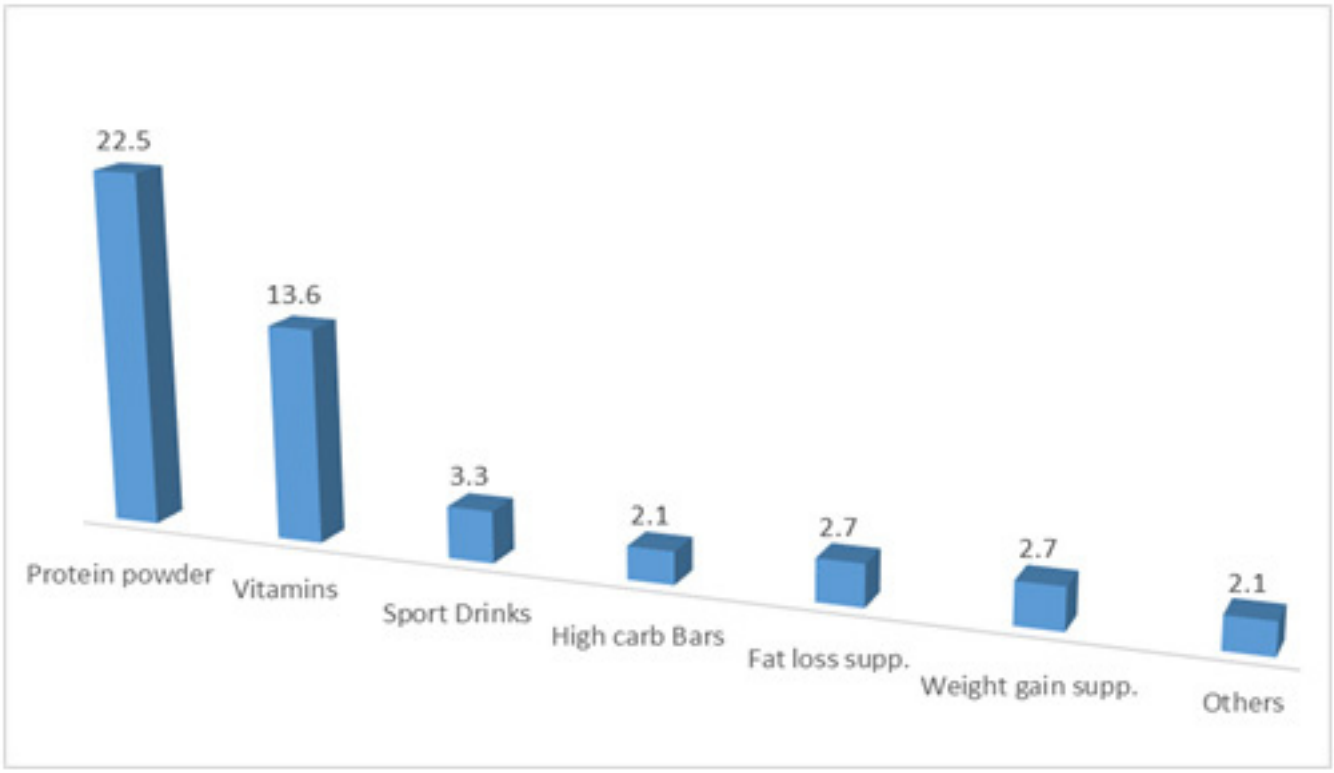


Figure 3: Distribution of the studied participants according to the main reason they use dietary supplements

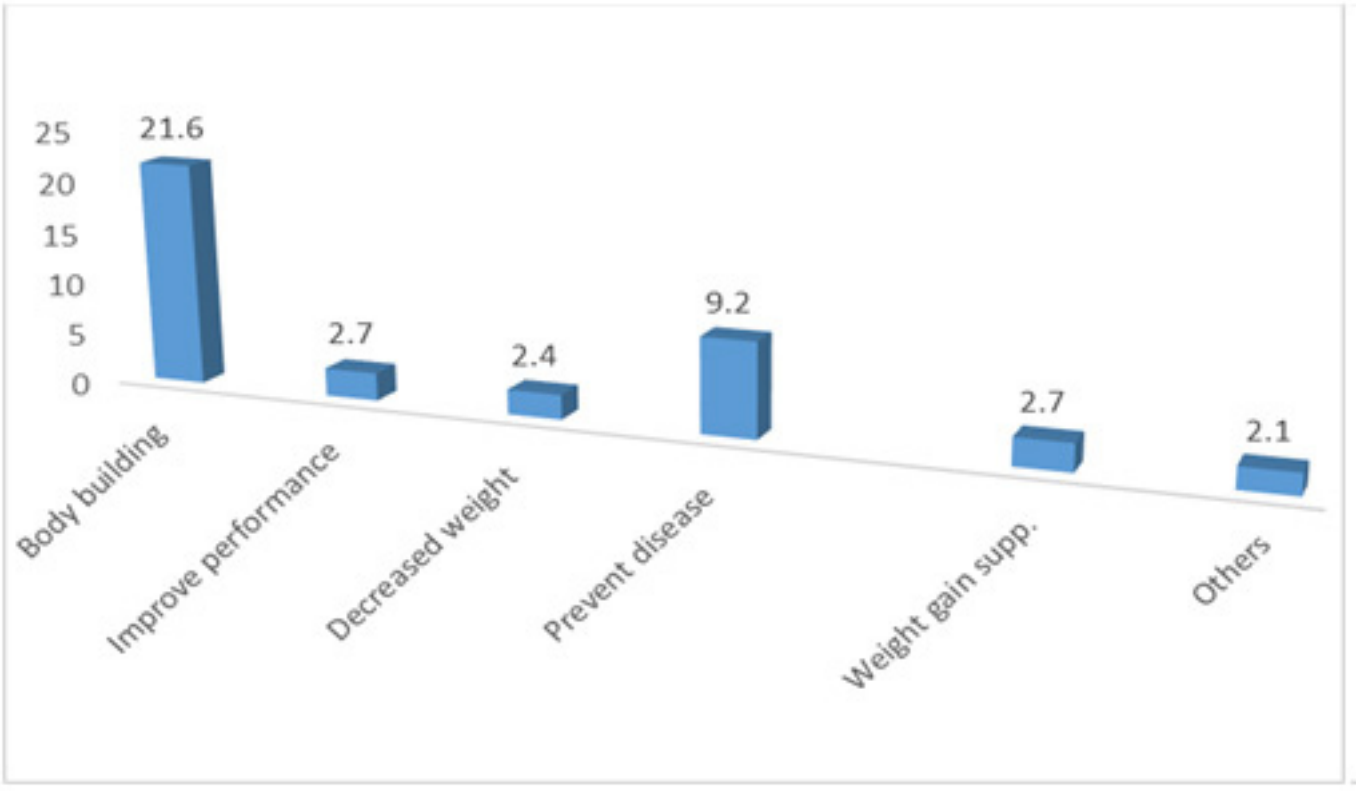


Figure 4: Distribution of the studied participants according to the way the users were introduced to supplements and where they get the information you require when using them

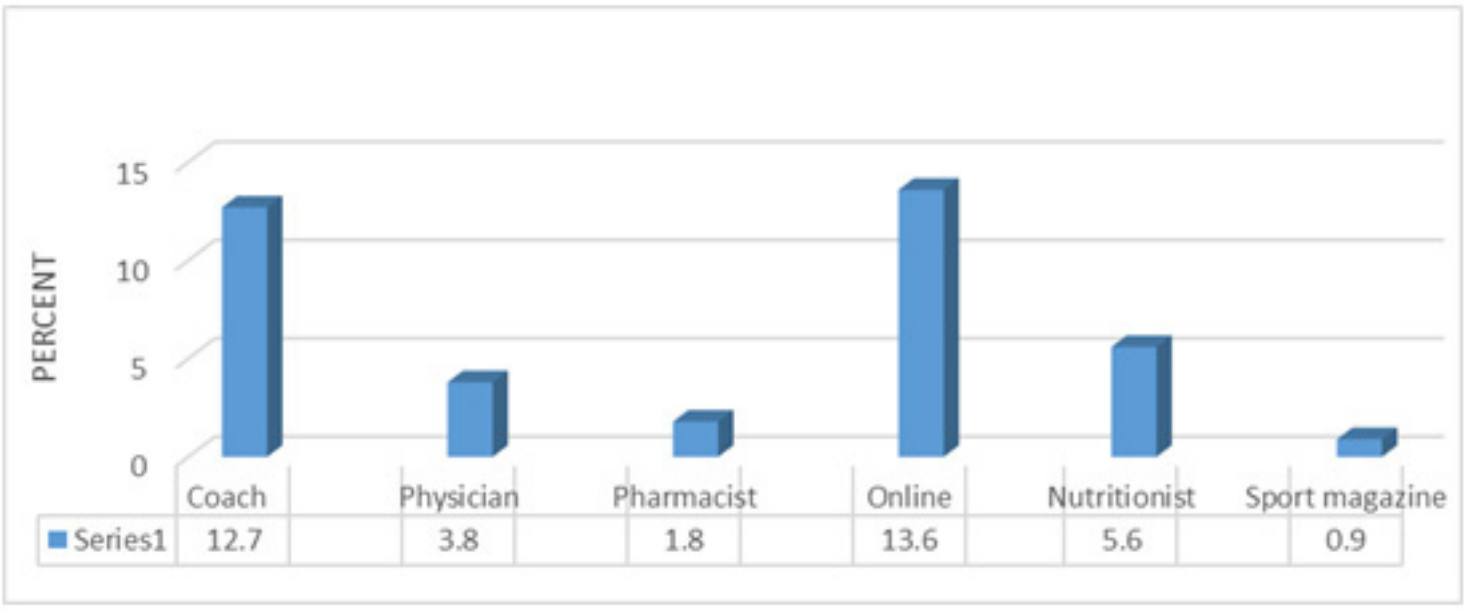
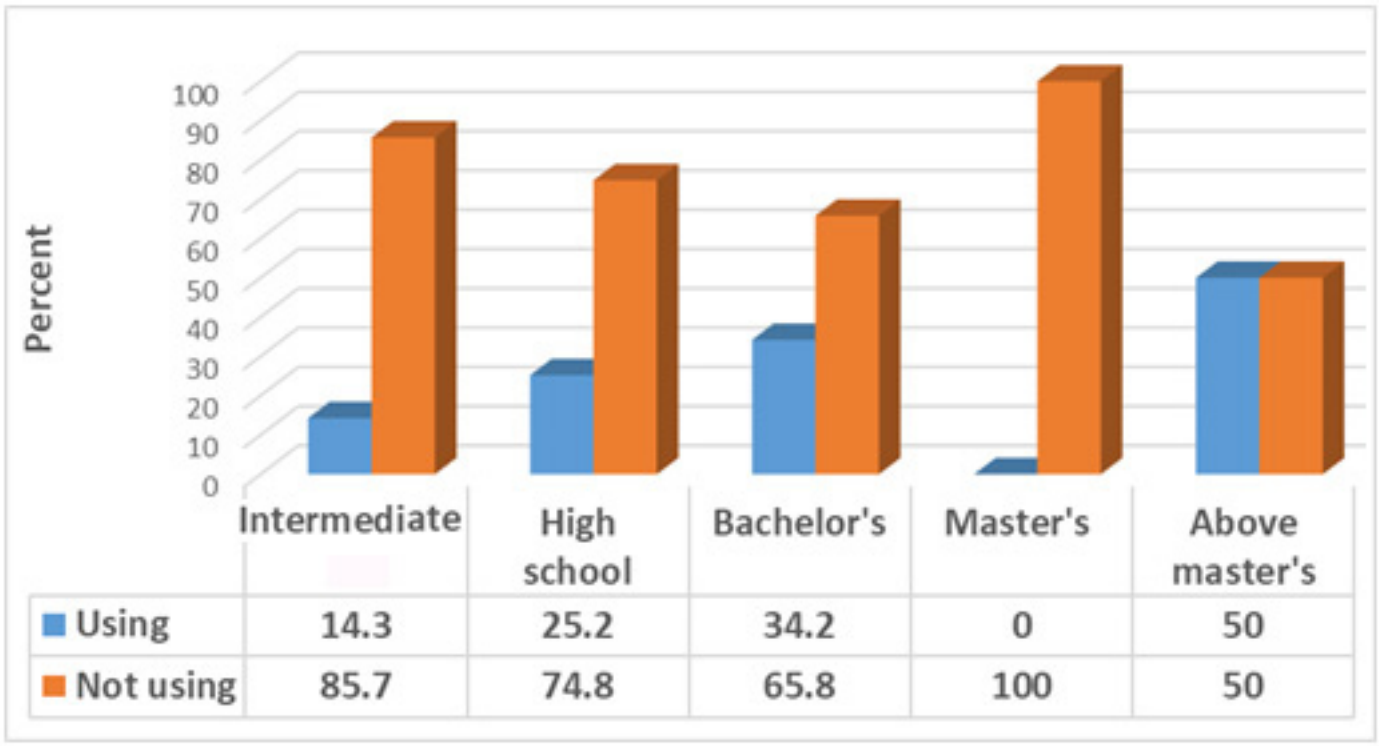


Figure 5: Relationship between participant's level of education and the use of any nutritional supplements or hormones



N.B. (Chi-Squared test ($\chi 2$) =6.91, p-value=0.14)

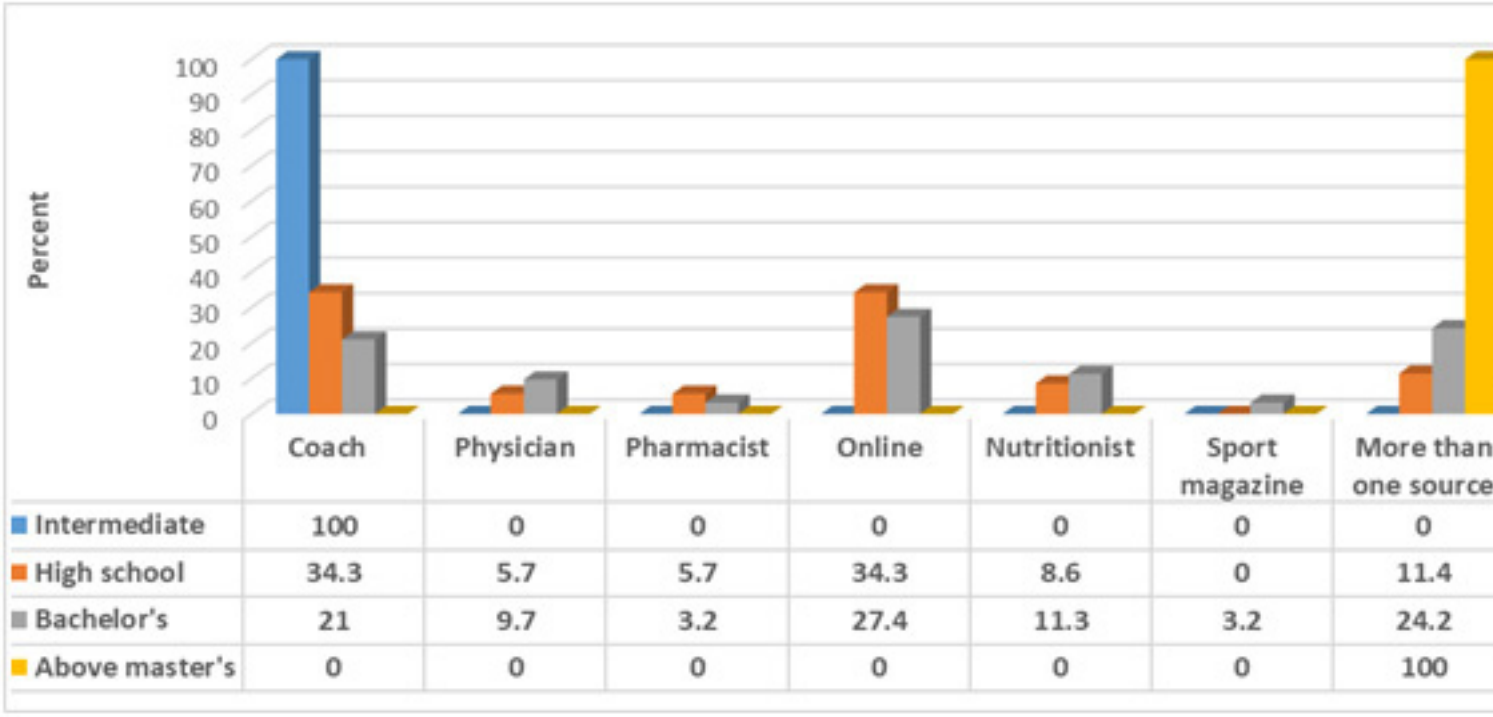
Table 3: Distribution of the studied participants according to their opinions about the side effects of the used supplements

Variable	No. (%)
Do you consider hypertension a side effect of supplement use?	
- Yes	38 (11.2)
- No	117 (34.6)
- I don't know	183 (54.1)
Do you consider liver disease a side effect of supplement use?	
- Yes	97 (28.7)
- No	75 (22.2)
- I don't know	166 (49.1)
Do you consider weight gain a side effect of supplement use?	
- Yes	120 (35.5)
- No	79 (23.4)
- I don't know	139 (41.1)
Do you consider kidney disease a side effect of supplement use?	
- Yes	136 (40.2)
- No	61 (18)
- I don't know	141(41.7)
Do you consider allergy a side effect of supplement use?	
- Yes	83 (24.6)
- No	79 (23.4)
- I don't know	176 (52.1)
Do you consider gastric upset a side effect of supplement use?	
- Yes	124 (36.7)
- No	59 (17.5)
- I don't know	155 (45.9)
Do you consider muscle pain a side effect of supplement use?	
- Yes	57 (16.9)
- No	130 (38.5)
- I don't know	151 (44.7)
Do you consider increased urination a side effect of supplement use?	
- Yes	110 (32.5)
- No	71 (21)
- I don't know	157 (56.4)

Table 4: Distribution of the studied participants according to their opinions about the side effects of the used hormones

Variable	No. (%)
Do you consider hypertension a side effect of hormones use?	
Yes	72 (21.3)
No	53 (15.7)
I don't know	213 (63)
Do you consider diabetes mellitus a side effect of hormones use?	
Yes	75 (22.2)
No	61 (18)
I don't know	202 (59.8)
Do you consider weight gain a side effect of hormones use?	
Yes	132 (39.1)
No	40 (11.8)
I don't know	166 (49.1)
Do you consider vision problems a side effect of hormones use?	
Yes	41 (12.1)
No	82 (24.3)
I don't know	215 (63.6)
Do you consider psychiatric problems a side effect of hormones use?	
Yes	121 (35.8)
No	47 (13.9)
I don't know	170 (50.3)
Do you consider prostatic hyperplasia a side effect of hormones use?	1 (0.3)
Yes	93 (27.5)
No	50 (14.8)
I don't know	
Do you consider testicular hypotrophy a side effect of hormones use?	
Yes	86 (25.4)
No	53 (15.7)
I don't know	199 (58.9)
Do you consider breast enlargement a side effect of hormones use?	
Yes	128 (37.9)
No	35 (10.4)
I don't know	175 (51.8)
Do you consider increased RBC a side effect of hormones use?	
Yes	61 (18)
No	47 (13.9)
I don't know	230 (68)

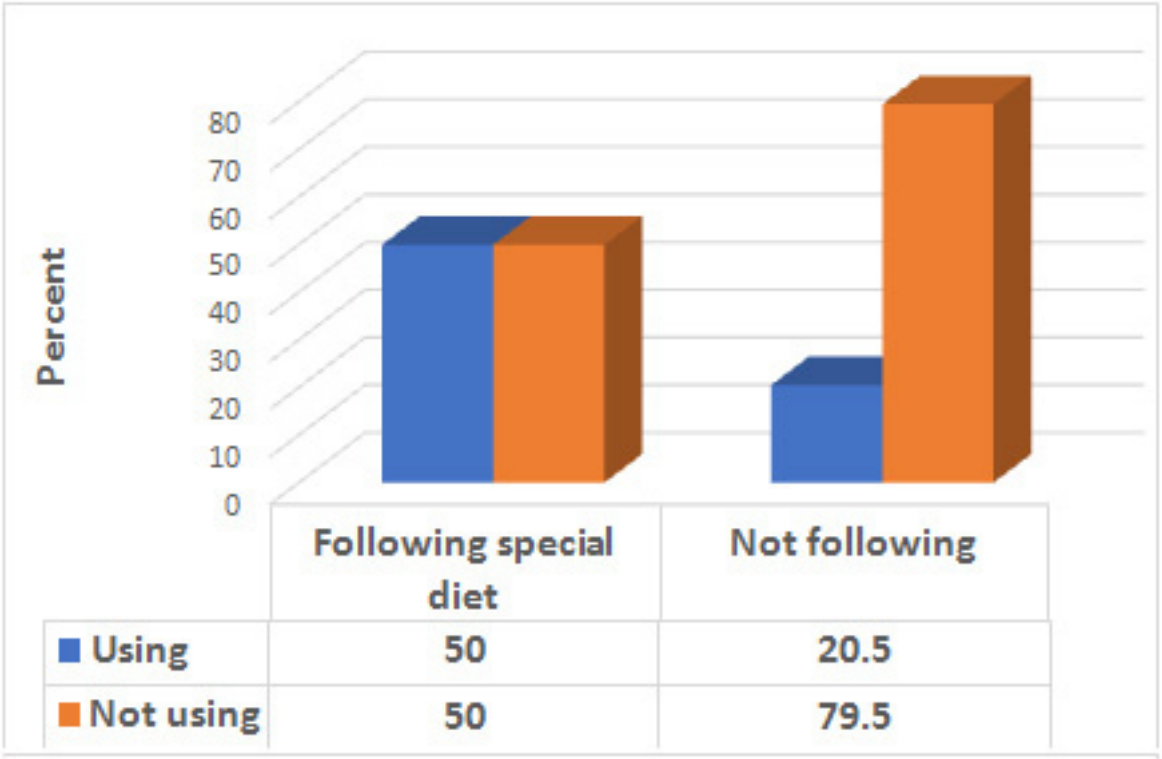
Figure 6: Relationship between participant's level of education and source of information



	Coach	Physician	Pharmacist	Online	Nutritionist	Sport magazine	More than one source
Intermediate	100	0	0	0	0	0	0
High school	34.3	5.7	5.7	34.3	8.6	0	11.4
Bachelor's	21	9.7	3.2	27.4	11.3	3.2	24.2
Above master's	0	0	0	0	0	0	100

N.B. (Chi-Squared test ($\chi 2$) = 12.57, p-value=0.81)

Figure 7: Relationship between following a special diet and the use of any nutritional supplements or hormones



	Following special diet	Not following
Using	50	20.5
Not using	50	79.5

Discussion

The present study that evaluated the knowledge, attitude and use of dietary supplement and hormones among gym attendees, was the first study to be done in Taif city.

Most of our participants were in the age that ranged from 18-25 years, and 75.7% of them were non-smokers; a result that showed that gym attendees have more insight into smoking risks.

People of this age group and with this level of education (54.4% of participants had a bachelor's degree), have more awareness of the health benefits of exercising compared to their peers in the population.

In our study, 29.6% of the participants were using nutritional supplements which is the least compared to other studies done in Tehran (66.7%) [17], Riyadh (47.9%) [18], Brazil (36.8%) [19], Beirut city (36.3%) [20], and Italy (30.1%) [21].

In the present study and both studies conducted in Riyadh and Beirut, the most common type of nutritional supplement used was protein powder [18].

As reported in the current study, gym attendees had their source of information from online (13.6%), and coaches (12.7%) and it seems strange that the participants didn't consider physicians (3.8%) as their main source of information. This indicates the need for coaches to have some medical training or provision of some medical supervision in these gyms to ensure the safety of their members.

Most of our respondents used supplements for better performance, to enhance their physical appearance, improve health, recovery and to prevent injury. Dietary supplement use may be irrational if the exerciser has a healthy diet and meal replacements that occur through the advice of a physician or dietitian.

In the study of the use of hormones and nutritional supplements that was done in Riyadh and conducted in 2016, it was found that most of the participants were not aware of the side effects of nutritional supplements such as: high blood pressure, liver disease, kidney disease, allergies, and muscle pain, although they had more knowledge about hormonal risk, when compared to their knowledge about risks of nutritional supplements. [18]

In our study most of the questions regarding the knowledge of side effects of nutritional supplements and hormones were answered by participants with "I don't know". This result shows that there was not much difference between the knowledge regarding the hormones' risk and nutritional supplements' risk among the participants.

In addition, our participants used them blindly without education. This could be due to their dependence on the coach and the online websites to gain information about nutritional supplements and hormones, however these sources have no scientific knowledge to give them validity to prescribe the nutritional supplement as individuals have different needs, risks and special conditions and even though there is no adequate fellow up for the users.

It is not a fault to care about bodybuilding and body image, which is the most common reason that most gym attendees use nutritional supplements and hormones, but the mistake is that when they want something from external sources, it could harm their body from the inside.

Limitations

One of the limitations of this study was using self-reported questionnaires that may be prone to recall bias. The use of a cross-sectional study showed the relation between variables without including a cause-effect relationship.

Conclusion

Based on the results of the present study, all gym attendees should be advised to consult a healthcare professional before the use of hormones or nutritional supplements. It is recommended that gym coaches should be educated regarding hormones and nutritional supplements by courses conducted by an expert. In addition, all gyms should be under the supervision of the Ministry of Health.

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