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Patterns of Sports Supplement Use among Iranian Female Athletes

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***Abstract*—**Supplement use is common in athletes. Besides their cost, they may have side effects on health and performance. 250 questionnaires were distributed among female athletes (mean age 27.08 years). The questionnaire aimed to explore the frequency, type, believes, attitudes and knowledge regarding dietary supplements. Knowledge was good in 30.3%, fair in 60.2%, and poor in 9.1% of respondents. 65.3% of athletes did not use supplements regularly. The most widely used supplements were vitamins (48.4%), minerals (42.9%), energy supplements (21.3%), and herbals (20.9%). 68.9% of athletes believed in their efficacy. 34.4% experienced performance enhancement and 6.8% of reported side effects. 68.2% reported little knowledge and 60.9% were eager to learn more. In conclusion, many of the female athletes believe in the efficacy of supplements and think they are an unavoidable part of competitive sports. However, their information is not sufficient. We have to stress on education, consulting sessions, and rational prescription.

***Keywords*—**athlete, female, sports, supplement

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I. Introduction

ATHLETES have a great keen for enhancement of their sport performance; and nutrition is an important aspect. The expanding dietary supplement industry dramatically impacts athletes engaged in competitive and/or recreational sports. In contrast to the male, female athletes have different nutritional requirements for maintaining health and achieving athletic potential [1]. It is likely, however, that for various reasons, not all athletes are able to consume a diet that meets their nutritional needs and thus resort to nutritional supplements.

Athletes can be confused about the issues around sports supplements. A recent study on high level track and field junior athletes in UK found that females (75%) used more supplements than males (55%); however this difference was not statistically significant [5].

Sport supplement use is not a young scientific field; however, best-practice is still controversial. Moreover, inadvertent doping seems to be a serious issue. Also sport supplements may have adverse effects on human health; these side effects may occasionally be serious and long lasting.

According to the FDA a dietary supplement is a product taken by mouth that contains a "dietary ingredient" intended to supplement the diet.

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Supplement is an overarching name for vitamins, minerals, herbal remedies, and other substances taken orally and regulated as foods and is subject to the general provisions of the Food Safety Act 1990, the Food labeling Regulations 1996 and the Trade Descriptions act 1968[1]. In IR. Iran, MOH (ministry of health) is in charge of dietary supplements regulations. The MOH classifies supplements as natural medicines. Therefore, Division of Pharmaceutical and Narcotic Affairs (Natural Medicine Department) is responsible for it. Indeed, nowadays PDR (physician desk reference) for Nonprescription Drugs, Dietary Supplements & Herbs is a valid reference for experts regarding vitamins limits in supplement products.

According to the 1994 Dietary Supplement Health and Education Act, a dietary supplement is removed from FDA approval only if it is proved as dangerous to the body. A relatively similar regulation is implemented in the UK where supplements are required to exhibit efficacy before marketing only if they contain medical claims and fall outside food regulations[3], [4].

In a study conducted by Magdalena Alicja Kobryner, 2009, 76 to 100% of athletes used at least one type of sports supplements and many believe that sports supplements are unavoidable necessity for optimum sports performance. In Iran, Sports Medicine Federation provides consultation regarding sports supplement use to athletes.

Most athletes do not have enough knowledge about appropriate supplements meeting their age, gender, and field of sports requirements. Supplement use tends to differ across genders for prevalence of use, types of supplements used, as well as reasons for use. Therefore, a thorough study on type, dosing and pattern of sport supplements use among Iranian female athletes sounds important.

II. Subjects And Methods

A KAP analysis on sports supplement use among female athletes all around the country was conducted in 2010. Following the study conducted by Magdalena and coworkers-UK 2009, a questionnaire was prepared and its reliability and validity were evaluated on 30 Iranian subjects. A meeting was held for all provincial coworkers for a concordant approach to questionnaire distribution all around the country. The study was cross sectional in design and utilized a face to face data gathering strategy. 254 female athletes from 14 provinces and 30 different sports fields entered the study.

Sampling method was of cluster type. Statistical analysis was performed by use of SPSS version 18.1.

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III. Results

254 athletes entered the study. Their mean age was 27.08 years (SE= 0.55) with 7 years sports participation as an average. Mean of weight was 60.95 (SE=0.67); mean of height was 163.81 centimeters (SE=0.42); and mean of body mass index (BMI) was 22.84 (SE=0.25). The academic level of participants was varied; 86 respondents were university graduated; 61 of them had academic background in the fields of physical education and/or nutrition.

Knowledge of the athletes regarding sports supplements was calculated by the sum of correct responses to a 12-item question. The respondents were subsequently classified as good (score: 9-12); average (score: 6-8); and poor knowledge (score: 1-5).Based on this criteria, 30.3% of athletes had good, 60.2% average, and 9.1% poor knowledge.

When asked about general supplement intake, most of the athletes (65.3%) chose the options "no/seldom". As a peer point of view, athletes believed that an average of 31.21% of their counterparts use sports supplements regularly.

Main recommendation sources of dietary supplements were medical doctors (31.9%), nutritionists (27.6%), pharmacists (4.3%), and supplement distributors (3.9%).

The reasons why athletes felt they need supplements are demonstrated in table I.

TABLE I
Reasons for Taking Supplements

Reasons for supplementation	% of respondents (n)
Make me feel better	10.2 (26)
Improve speed/ agility	13.8 (35)
Increase energy level	28.7 (73)
Prevent injury and illness	9.8 (25)
Increase my ability to cope with pain	4.3 (11)
Improve my concentration	3.9 (10)
Alter my genes to enhance my performance	2.4 (6)
Help me to relax	8.7 (22)
I suppose I need it	12.6 (32)
Inadequate diet	16.1 (41)
Improve strength/ power	20.1 (51)
Weight gain/ muscle gain	11.4 (29)
For my general health	31.9 (81)
Improve my endurance/ make me able to train longer	23.6 (60)
Speed up my recovery after injury	5.1 (13)
Weight loss/ fat loss	9.1 (23)

The most frequent supplements used by female athletes were vitamin supplements (48.4%); out of which, vitamin C (22.5%), multivitamins (18.3%), vitamin E (15.6%), and folic acid (15.5%) showed the highest frequencies. The second most frequent supplements used by female athletes after vitamins were mineral supplements (42.9%); among this category, iron supplements showed the highest frequency by 29.2%.

21.3% of female athletes stated that they used energy supplements regularly, the most frequent of which were energy drinks (11.8%).

The most frequent herbal supplement used was green tea (9.5%).The most popular protein supplements and weight gainers were soy proteins and isoflavones (3.6%).

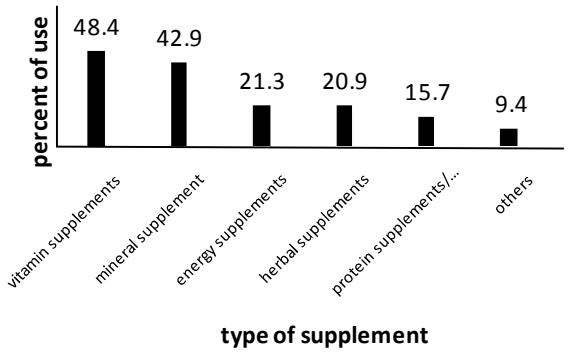


Fig. 1 Frequency of supplement use by female athletes

The female athletes decidedly purchased their supplements in pharmacies (59.4%) and with less frequency in supermarkets (15%), and sport supplements stores (11.9%). 7.9% of the athletes were supplied by their coaches; and 6.3% by their sports clubs.

As for decision factors when selecting supplements, recommendation (40.7%), availability (34%), and brand (29.2%) ranked highest. 27.3% of athletes reported price as an important factor in selecting a supplement; mean monthly budget allocated to supplement purchase was nearly 160 US Dollars.

Nearly 68.9% of participants believed that supplements are effective to improve athletic performance and 79.6% believed that sport supplements are good and healthy substitutes for banned substances. Nearly 57.9% thought that supplements are necessary to be competitive but 8.24% thought inversely.

Most respondents (61%) did not feel that athletes in their sports were pressured to take supplements. 34.4% of athletes reported improved performance through sport supplement use and 13.5% did not state this effect.

As much as 80.6% of the female athletes had never experienced negative side effects after using sport supplements. On the other hand, 6.8% of the participants reported negative side effects.

Over 68.2% felt that does not know enough about different supplements and their use, and 60.9% would like to know more about them.

Effects on general health (53.5%), performance enhancing properties (48.8%), and potential negative side effects (46.9%) were the most desired information about sport supplements which female athletes thought should be provided by medical doctors (55.5%), nutritionists (44.9%), coaches (29.1%), fitness trainers (20.1%), university teachers (13%) and pharmacists (12.6%).

IV. Discussion

Knowledge of the athletes regarding sports supplements was not adequate in 69.3% of the respondents. This may lead to amazement of athletes in selecting appropriate supplements to meet their requirements.

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Although 68.9% of the participants believed in efficacy of supplements in improving sports performance, and 57.9% considered supplement as undeniable component of professional sport, 65% of them either did not use any sports supplements at all, or they used less than 2 times weekly.

As much as 68.2% of the respondents felt that does not know enough about different supplements and their use. In the study conducted by Nieper et al too, many athletes felt their information was inadequate [5].

Poor knowledge and subsequently inappropriate use of supplements may be a threat to athletes' health. In our study, just 35 percent of athletes used supplements; however, as much as 7% of respondents reported some side effects. In our study, only 3.2% of the athletes could recognize prohibited versus safe substances; and this may lead to inadvertent doping violation.

In many sports fields, Iranian female athletes compete with Islamic cover and they are more susceptible to fatigue and dehydration caused by perspiration. So, taking sports drinks should be encouraged by Moslem female athletes; however, our results showed that just 7.1% of athletes consumed energy drinks.

Our study revealed that many athletes would like to acquire information from medical doctors. In another study conducted by Malinauskas et al, 71% of athletes considered coaches the best consultants and internet the most popular source of information regarding sports supplements [7]. It is evident that medical doctors can provide by far more reliable information and we can schedule educational sessions for medical doctors to update their knowledge. Subsequently they can transfer the information to athletes.

As for why they need sports supplements, participants focused on maintaining good health by using them. This would be an opportunity to rational recommendations by sports physicians. These findings are in accordance with previous studies, which showed that female athletes used supplements mainly to maintain and improve their health status, on the other hand male athletes considered weight gain, strength, and agility more important [2], [8], [9].

Our study showed that folic acid and iron were popular among female athletes. Folic acid supplementation may be desirable in childbearing age. Although adequate iron stores may have some effects on sports performance, iron excess may be detrimental; so long time supplementation should be under supervision of a physician. Thalassemia minor is endemic in Iran and unfortunately many affected persons may use iron supplements in the presence of adequate stores. Likewise, pseudo anemia (sports anemia) does not need treatment. In a study published in 2009 by Ashtiani et al, the prevalence of minor thalassemia in 34,030 healthy adults in Tehran was 13.2% [10]. In our study, 38.8% of athletes reported to have anemia and 2.4% reported thalassemia minor; 36.7% of those reported to be anemic and 23.9% who denied anemia used iron supplementation.

In a study by Shams et. al on 237 university students, the prevalence of iron deficiency was 40.9% and that of iron deficiency anemia (Hb<12 g/dl) was 3.8 percent [11]. Another study reported 17.3% for anemia (Hb<=12 g/dl) in national level Iranian female athletes [12].

In the present study, although the most frequent energy supplement used by female athletes showed to be energy drinks, this frequency is less than other countries. In Kobryner's study most athletic students used at least one kind of sports supplements, and sports drinks comprised the most frequent supplement [2]. Kreider and Chrysanthopoulos, showed that popularity of sports drinks may come from scientific findings [13], [14].

Based on the popularity of green tea among other herbal supplements in our study, we may consider formulating energy drinks with green tea ingredient. In an observational study in Japan, green tea led to decreased all cause mortality and cardiovascular mortality among users. Graham showed that the caffeine component of green tea enhances sports performance [15]. The potential of low-dose caffeine ingestion (2 - 5 mg/kg body mass) to enhance endurance performance is well established. However, care must be taken not to overdose because visual information processing might be impaired [16].

Among protein supplements and weight gainers, soy bean based products were the most frequent used which can be desirable for general and cardiovascular health of female athletes.

V. CONCLUSION

Many of the female athletes believe in the efficacy of dietary supplements and think that supplements are an unavoidable part of competitive sports. However, their information is not sufficient. The athletes are eager to learn more, so we have to stress on education programs and consulting sessions. By this way, supplement prescription will become rational.

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