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Knowledge, Attitudes and Practices (KAP) Relating to Dietary Supplements Among Health Sciences and Non-Health Sciences Students in One of The Universities of United Arab Emirates (UAE)

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ABSTRACT

Introduction: The use of Dietary Supplements (DS) has increased substantially in the United Arab Emirates (UAE) in recent years, despite the fact that the efficacy and safety of these supplements are not proven yet. In addition, the practices of supplement users in the UAE remain undocumented.

Aim: To determine the usage of DS in health sciences and non-health sciences students; and to determine their knowledge, attitudes and practices (KAP) regarding these supplements.

Materials and Methods: A descriptive, cross-sectional, questionnaire-based study was conducted among university students. Based on the Raosoft online calculator, it was anticipated that the sample of 383 students would enable us to achieve the study objectives. Students were recruited from Ajman University of Science and Technology and identified by the academic staff through students' records. All students who were registered at Ajman University of Science and Technology – including medical (i.e. dental, pharmacy and health sciences) and non-medical colleges (i.e. engineering, business administration, law, information technology, mass communications and humanities) – were invited to participate, after obtaining the approval of the Institutional Ethics Committee (IEC), (during the period of January-February 2015). This study used quantitative method approach. Therefore, data were analysed quantitatively using SPSS version 22.0.

Results: More than one-third of participants (39%) were found to consume DS. The most common reasons for consuming supplements were to maintain good health (58,21%) and ensure adequate nutrition (43,15%). Almost two-thirds of participants (65%) perceived that the best way to obtain nutrients is through food and DS together (49%), or DS alone (16%). Therefore, there was a relatively high amount of DS intake among participants in this study. With regard to medical and non-medical students' use of DS, there were no significant differences in the use ($p=0.139$). However, other findings suggest that there are significant differences in the knowledge of health sciences and non-health sciences students pertaining to the health benefits and safety of these supplements ($p<0.001$), what they are ($p=0.040$) and the source of help that should be sought when using them ($p<0.001$).

Conclusion: There is a relatively high prevalence of DS consumption among students, which they reported as using to maintain good health and ensure adequate nutrition. However, findings suggest that there are significant differences in the knowledge of health sciences and non-health sciences students pertaining to the health benefits and safety of these supplements. Therefore, awareness of DS usage and information should be integrated into everyday practice.

Keywords: Information, Use, Vitamins

INTRODUCTION

Dietary Supplements (DS) (e.g., vitamin, mineral, herbs or other botanical, amino acid, etc.) were defined by the Dietary Supplement Health and Education Act (DSHEA) of 1994. They include a wide array of non-food, non-drug substances intended to supplement the diet, but are not intended to treat diseases or disorders of the human body [1]. DSs make up \$152 billion of the world market [2]. In the United Arab Emirates (UAE), they are expected to continue growing and to have a value of 7% by 2019, at constant 2014 prices [3]. The increase in demand for DS in the UAE has been attributed to various reasons, including government information campaigns with a high level of media attention, which continues to have a positive impact on DS consumption [3]. In addition, DSs usage may help in enhancing performance, improving health, preventing nutritional deficiencies, boosting immunity and reducing stress [4-6]. However, the exact benefits of nutritional supplements are still not well established [7-9]. The reason for this

is that manufacturers do not have to prove the efficacy and safety of a dietary supplement to the Food and Drug Administration (FDA) before it is produced, sold, or marketed [10]. Consequently, there are many untested products in the market place. Moreover, various potential risks have been described when using DS in high doses or without medical supervision, especially because they can be purchased without a prescription [11]. Given the increasing prevalence of DS and prescription as well as Over-the-Counter (OTC) medication usage among consumers, healthcare providers and health educators have expressed concerns regarding the potential for drug-supplement interactions as well as other safety concerns [12,13].

Healthcare providers including practitioners, pharmacists, nurses and Health Sciences Students (HSSs) can widely influence the public's belief and practices regarding health and medicines, and they can advise individuals regarding the usage of DS and the effects of those supplements on health [14,15]. Since it is

believed that the health behaviour of HSSs will be reflected in their attitude while counselling patients regarding diet and nutrition, it is important to collect their DS use data [16,17]. Little is known about supplement users and their dietary behaviour in the Middle East [18,19], and the practices of individuals in the UAE remain undocumented. Therefore, the aim of this study was to determine the prevalence of usage, Knowledge, Attitudes and Practices (KAP) towards DS among university students and their relationship with two selected courses (health sciences and non-health sciences courses).

MATERIALS AND METHODS

A descriptive, cross-sectional, questionnaire-based study was conducted among university students during Jan-Feb 2015. Students were recruited from Ajman University of Science and Technology and identified by the academic staff through students' records. All students who were registered at Ajman University of Science and Technology – including medical (i.e. dental, pharmacy and health sciences) and non-medical colleges (i.e. engineering, business administration, law, information technology, mass communications and humanities) – were invited to participate. Ajman University of Science and Technology was founded in 1988 and it has two campuses, one in Ajman and the other in Fujairah. It serves around 5,000 students from all over the UAE.

The sample size was measured using the Raosoft online calculator (Raosoft) [20]. Raosoft online calculator is designed specifically for population surveys to calculate the sample size and determine how many responses are needed, to meet the desired confidence level with the margin of error (usually 5%). Therefore, it is highly recommended to be used for such study with the consideration of the population size [21,22]. The total population of students in UAE is approximately 98,000 [23]. Therefore, in order to achieve a confidence level of 95% and a 5% margin of error, a minimum sample size of 383 was required. However, a total of only 280 students agreed to take part and were requested to fill in the questionnaire form after the importance of the study and their contribution to it was explained. They were also asked to sign a consent form if they wished to participate in the study. A sample of 280 students would provide a confidence level of 90% and a 5.85% margin of error which may not fully affect the power of the study.

Regarding questionnaire validity and reliability, a structured questionnaire was developed after a thorough literature review, which was conducted initially by the chief investigator and research papers were shortlisted for further discussion among the research team. All the views, thoughts and concerns on the proposed study were taken into consideration during the design phase. This also involved a face and content validity of the quality assessment tool to ensure that the questionnaire was reflective of the practice in the UAE. An initial draft of the questionnaire was designed after the research team had reviewed all the selected papers comprehensively [19,24,25]. Individual survey items were reviewed by a group of college pharmacy faculty members and consensus was reached regarding the clarity and importance of each item. The validation process was further expanded by piloting the questionnaire with four students who met the eligibility criteria and were not aware of this study. Additional comments were utilised to further refine the instrument. The questionnaire was divided into two sections; it included items related to participants' characteristics and 11 items assessing consumers' knowledge, attitudes and practices related to DS:

1. Personal data, including age, gender, nationality, and college.
2. Knowledge, attitudes and practices about DS.

The second section of the survey was trichotomous. The questions were yes/no/I do not know type questions and were divided into 3 points; yes =1, no =2, I do not know =3. The scoring was calculated

as the total number of yes, no, I do not know responses and then the percentage of scores was measured in the two groups.

STATISTICAL ANALYSIS

Data were analysed using SPSS version 22.0. A chi-square test for independence was used to detect relationships between group inclusion (medical and non-medical students) and their KAP towards DS; results for categorical variables are presented as N (%). Linear regression was conducted to determine the odds of using supplements, by groups. Odds ratios for using supplements compare those who responded "Yes, we use it" to those who responded either "No, we do not use it" or "Don't Know". An alpha level of 0.05 was set to denote statistical significance.

RESULTS

Students' Characteristics

The mean age of the 280 participants was 21 years (SD= ±4). The age categories were also defined with intervals equal to 5 years (e.g. 16-20 years old). An equivalent number of participants from each gender (Male=140 and Female=140) were included (see [Table/Fig-1]). There were almost twice as many non-health sciences students (N=182) as health sciences students (N=98).

| Parameter | N (%) |
|------------------------------|-------------|
| Age categories (Year) | |
| 16-20 | 138 (49.2%) |
| 21-25 | 121 (43.3%) |
| Above 25 | 21 (7.5%) |
| Gender | |
| Male | 140 (50%) |
| Female | 140 (50%) |
| Course | |
| Health sciences courses | 98 (35%) |
| Non-health sciences courses | 182 (65%) |
| Ethnicity | |
| Arabs | 269 (96%) |
| Others | 11 (4%) |

[Table/Fig-1]: Characteristics of the participants (N=280).

Usage and Sources of DS Information

More than one-third of participants (N=108; 39%) were found to be using DS. Among 108 supplement users, it was found that most were non-medical students (N=74), female (N=59) and aged under 20 (N=55). There was no significant difference between groups of medical and non-medical students regarding the use of DS ($p=0.193$). Of these 108, two-thirds (69%) were found to be taking these supplements on a daily basis. However, non-medical students had significantly less information about what these supplements were ($p=0.040$) and were less likely to attend a health campaign or workshop on DS ($p=0.006$). In addition, non-medical students were found to be less likely to seek help from healthcare providers when using these supplements ($p<0.001$). This may be because they were more likely to think that these supplements are safe ($p<0.001$), and do not cause interactions ($p=0.039$) [Table/Fig-2].

The most common source of information to which subjects referred for DS information was healthcare providers followed by the internet, TV/journal advertisements, relatives/friends, signs/posters in an educational institute and product information leaflets. Considered together, both groups considered healthcare professionals to be the primary and the most trusted source of information (62%), and there was no significant difference between groups ($p=0.475$). However, there were marked differences in

other sources of DS information consulted between medical and non-medical students ($p=0.006$). For example, those in medical schools relied more heavily on DS leaflets compared to nonmedical school students ($p=0.001$), while those in non-medical schools relied more on friends'/relatives' advice ($p=0.100$) [Table/Fig-3].

Most participants ($N=137$) perceived that the best way to obtain nutrients is through food and supplements together. However, some participants ($N=45$) believed that supplements are the best way to obtain the nutrients they need; these were mostly non-medical students ($N=32$) compared to 13 medical students. Overall, respondents agreed that the most common reasons for consuming DS were to maintain good health ($N=58$), ensure adequate nutrition and fill a nutrition gap ($N=43$). The majority felt that all the factors in [Table/Fig-4] together were important reasons

| Serial number | Questions | Total students 280 (%) | Medical students 80 (%) | Non-medical students 200 (%) | p-value ^a |
|---------------|--|------------------------|-------------------------|------------------------------|----------------------|
| 1 | Do you know what dietary supplements are? ^b | | | | |
| | Yes | 238 (85%) | 74 (93%) | 164 (82%) | 0.040* |
| | No | 31 (11%) | 6 (7%) | 25 (13%) | |
| | Do Not Know | 11 (4%) | 0 | 11 (5%) | |
| 2 | Have you attended any Health campaign/workshop on dietary supplement? ^b | | | | |
| | Yes | 98 (35%) | 38 (48%) | 60 (30%) | 0.006* |
| | No | 182 (65%) | 42 (52%) | 140 (70%) | |
| | Do Not Know | 0 | 0 | 0 | |
| 3 | Do you use any dietary supplement? ^b | | | | |
| | Yes | 108 (39%) | 34 (43%) | 74 (37%) | 0.193 |
| | No | 165 (59%) | 46 (57%) | 119 (60%) | |
| | Do Not Know | 7 (2%) | 0 | 7 (3%) | |
| 4 | I always look for a professional medical help, when taking dietary supplement? ^b | | | | |
| | Yes | 147 (53%) | 59 (74%) | 88 (44%) | <0.001* |
| | No | 113 (40%) | 17 (21%) | 96 (48%) | |
| | Do Not Know | 20 (7%) | 4 (5%) | 16 (8%) | |
| 5 | Do you think the use of nutritional supplements is always safe? ^b | | | | |
| | Yes | 30 (11%) | 4 (5%) | 26 (13%) | <0.001* |
| | No | 197 (70%) | 71 (89%) | 126 (63%) | |
| | Do Not Know | 53 (20%) | 5 (6%) | 48 (24%) | |
| 6 | Do you think that taking a drug, food or drinks with the dietary supplement might interact with each other? ^b | | | | |
| | Yes | 135 (48%) | 47 (59%) | 88 (44%) | 0.039* |
| | No | 63 (23%) | 11 (14%) | 52 (26%) | |
| | Do Not Know | 82 (29%) | 22 (27%) | 60 (30%) | |

[Table/Fig-2]: Questionnaire used to determine knowledge, attitudes and practices of study participants regarding dietary supplements.

^a Compares Medical and non-medical students.

^b Categorical variables expressed as n (%).

* Denotes statistical significance $p < 0.05$.

| SN | Questions | Total students 280 (%) | Medical major 80 (%) | Non-medical major 200 (%) | p-value ^a |
|----|--|------------------------|----------------------|---------------------------|----------------------|
| 1 | Healthcare professionals | 174 (62%) | 49 (62%) | 125 (62%) | 0.475 |
| 2 | Internet | 39 (14%) | 10 (13%) | 29 (15%) | 0.411 |
| 3 | Product information leaflets | 12 (4%) | 9 (11%) | 3 (2%) | 0.001* |
| 4 | Signs poster in an educational institute | 13 (5%) | 9 (11%) | 11 (12%) | 0.229 |
| 5 | Friends and relatives | 21 (7.5%) | 3 (3%) | 18 (9%) | 0.100 |
| 6 | TV or journal advertisements | 21 (7.5%) | 7 (9%) | 14 (7%) | 0.390 |

[Table/Fig-3]: Sources of dietary supplements information for medical and non-medical students.

^a Compares Medical and non-medical students.

* Denotes statistical significance $p < 0.05$.

| Serial number | Reasons | Medical major 80 (%) | Non-medical major 200 (%) | Total 280 (%) |
|---------------|--|----------------------|---------------------------|---------------|
| 1 | All below factors together | 25 (31%) | 73 (37%) | 98 (35%) |
| 2 | Maintain good health | 19 (24%) | 39 (19%) | 58 (21%) |
| 3 | Ensure adequate nutrition and fill nutrition gap | 15 (19%) | 28 (14%) | 43 (15%) |
| 4 | Treat minor illnesses | 7 (9%) | 21 (10.5%) | 28 (10%) |
| 5 | Meet increased energy demands of the body | 9 (11%) | 18 (9%) | 27 (10%) |
| 6 | Prophylaxis to prevent diseases | 5 (6%) | 21 (10.5%) | 26 (9%) |

[Table/Fig-4]: Reasons for consuming dietary supplements ($N=280$).

| Sample ($N=280$) ^{b,c} | Any supplement use | None users | Do not know | Odds ratio, adjusted (95% CI) ^a |
|-----------------------------------|--------------------|------------|-------------|--|
| Medical students | 34 (43%) | 46 (75%) | None | Ref |
| Non-medical students | 74 (37%) | 119 (60%) | 7 (3%) | 0.077 (-0.048, 0.228) |

[Table/Fig-5]: Supplement use by medical and non-medical students.

^a Adjusted odds ratios controlled for all independent variables.

^b Data expressed as n(%).

^c n may vary between variables due to missing or incomplete data.

for taking DS ($N=98$). The reasons for conserving DS are presented in [Table/Fig-4].

Responses to the question "Do you use any dietary supplement?" were not significantly different between the two groups of participants (adjusted: 0.077 (-0.048, 0.228) for medical to non-medical students; $p = 0.200$) [Table/Fig-5].

The majority of respondents ($N=249$; 89%) reported purchasing DS from pharmacies, whereas 15 participants (5%) purchased them from health club stores, followed by supermarkets (3%) and other stores (3%).

DISCUSSION

To the best of our knowledge, this is the only study till date in the Middle East, reporting DS use in individuals among the medical & non-medical students. Additionally, this study sought to better quantify frequency of concomitant use of supplements, an important area of ongoing clinical concern. This study also assessed consumers' preferences related to information sources consulted, as well as consumers' KAP regarding DS.

This study revealed that the prevalence of DS consumption among university students in the UAE is 39%. As a result, it shows that DS use by university students is a common practice. This relatively high prevalence of DS consumption may be because, the beliefs about the need for supplement use are widespread. The DS use is expected to continue growing in the UAE, as reported by the Nationally Country report data in 2015 [3]. This study's findings were consistent with three previous studies conducted in developing countries among university students (i.e. Jordan, Malaysia and India) [26-28], in which almost half of the sample population were DS users ($\leq 50\%$). However, this is lower prevalence among students in a developed country such as the United States, with the rate varying from 55-65% [29,30]. This 39% can be justified by the fact that UAE residents still commonly maintain a diet that is low in nutrients and high in starch and fat, which results in health problems [31]. As a result of the increasing number of DS consumers in the UAE, it is suggested that the criteria used to evaluate DS for inclusion in health-system formularies should be as rigorous as those established for non-prescription drugs, as the self-administered use of DS may increase patients' risk of developing an adverse reaction. In addition, awareness of dietary supplement use should be integrated into everyday practice. For example, in this study almost two-thirds of participants (65%) perceived that the best way to obtain nutrients is through food

and DS together, or DS alone. Participants thought that the use of DS was important to maintain good health (58,21%) and ensure adequate nutrition (43,15%). Similar findings were reported in studies by Al-Naggar et al., Suleiman et al., and Sharma et al., [26-28]. It is important that users get the message that DS are intended to supplement food but are not substitutes for a healthy diet and lifestyle to maintain good health and ensure adequate nutrition. Moreover, supplements cannot replace medication or therapy to treat a medical condition. A supplement alone will not necessarily cure or treat a medical condition. It is also worth mentioning that not all supplements are beneficial, especially when taken in combination with other medications or in case of overdose.

This study revealed that the most common sources of obtaining information on DS were healthcare professionals, followed by the internet and TV/journal advertisements, which was in concordance with the findings of other studies [26,28]. Being the most trusted source of information, healthcare professionals' awareness of and ability to pose relevant questions and provide information to users about the use of DS should be enhanced. In addition, DS users should be directed by healthcare professionals to credible sources of information, and instructed on how to evaluate DS use and report an adverse event. Moreover, DS users should start with a little education on DS from a trusted, reliable, evidence-based information source such as physicians or pharmacists rather than seeking information from less reliable and easily accessible source such as TV adverts or the internet.

As for the type of faculty, there were no significant differences between the mean of those from a medical/health sciences background versus those from a non-medical background in terms of DS usage ($p = 0.139$). However, other findings suggest that there are significant differences in the knowledge of health sciences and non-health sciences students pertaining to the health benefits and safety of these supplements, what they are and the source of information and help which should be sought when using them. This difference may be because students from health sciences faculties have better knowledge regarding nutrition and DS than those who are not from health sciences faculties. Similar findings have been reported in other studies [26,32]. Therefore, there is an urgent need to provide university students, especially those from a non-medical background, with education and access to scientific and unbiased information to avoid risks.

LIMITATION

This survey has some limitations. First, it was a cross-sectional study and therefore it gave only a snapshot of participants' KAP relating to DS at the time of the survey. Another limitation of this study is the study population, which was not equally distributed, as there were a large number of non-medical students as compared to medical ones. Finally, careful attention is required before coming to a conclusion due to achieving a smaller sample than what it was estimated which may yield imprecise outcomes.

CONCLUSION

There is a relatively high prevalence of DS consumption among students, which they use to maintain good health and ensure adequate nutrition. However, findings suggest that there are significant differences in the knowledge of health sciences and non-health sciences students pertaining to the health benefits and safety of these supplements, what they are and the source of information and help which should be sought when using them. Therefore, awareness of dietary supplement use and information should be integrated into everyday practice. There is a continuing need for DS consumers to be educated to better determine the appropriate use of dietary supplements. The UAE government and the local media should make attempts to draw attention to these issues, taking steps to boost public awareness of the potential

for adverse effects and supplement-drug interactions and the importance of maintaining a healthy diet.

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REFERENCES

- [1] Dietary Supplement Health and Education Act. Pub L No. 103-417, 108 Stat 4325 (codified at 21 USC: 301 [1994]).
- [2] Ritz BW and Gardner EM. Introduction. In: Fulop T, Franceschi C, Hirokawa K. Handbook on Immunosenescence: basic understanding and clinical applications. New York: Springer; 2009.
- [3] Country report. Vitamins and Dietary Supplements in the United Arab Emirates. <http://www.euromonitor.com/vitamins-and-dietary-supplements-in-the-united-arab-emirates/report>. Published June 2015. Accessed December 2015.
- [4] Froiland K, Koszewski W, Hingst J, et al. Nutritional supplement use among college athletes and their sources of information. *Int J Sport Nutr Exerc Metab.* 2004;1:104-20.
- [5] Kristiansen M, Levy-Milne R, Barr S, et al. Dietary supplement use by varsity athletes at a Canadian University. *Int J Sport Nutr Exerc Metab.* 2005;2:195-210.
- [6] Erdman KA, Fung TS, and Reimer RA. Influence of performance level on dietary supplementation in elite Canadian athletes. *Med Sci Sports Exerc.* 2006;2:349-56.
- [7] Lukaski HC. Vitamin and mineral status: effects on physical performance. *Nutrition.* 2004;8:632-44.
- [8] Huang SH, Johnson K, Pipe LA. The use of dietary supplements and medications by Canadian athletes at the Atlanta and Sydney olympic games. *Clin J Sport Med.* 2006;1:27-33.
- [9] Volpe SL. Micronutrient requirements for athletes. *Clin J Sport Med.* 2007;1:119-30.
- [10] US Food and Drug Administration (FDA) [online]. US Food and Drug Association: Dietary Supplements. Silver Springs, MD; 2012. <http://www.fda.gov/Food/DietarySupplements/default.htm>. Accessed November 2015.
- [11] Schwenk TL, Costley CD. When food becomes a drug: nonanabolic nutritional supplement use in athletes. *Am J Sports Med.* 2002;6:907-16.
- [12] Palmer ME, Haller C, McKinney PE, et al. Adverse events associated with dietary supplements: an observational study. *Lancet.* 2003;361:101-06.
- [13] De Smet PA. Health risks of herbal remedies: an update. *Clin Pharmacol Ther.* 2004;76:1-17.
- [14] Gardiner P, Woods C, Kemper KJ. Dietary supplement use among health care professionals enrolled in an online curriculum on herbs and dietary supplements. *BMC Complement Altern Med.* 2006;6:21.
- [15] Teng CL, Tey KK, Lim PH, et al. Dietary supplements: usage and opinions among health sciences students. *International e-Journal of Science, Medicine and Education.* 2008;2:302.
- [16] Spencer EH, Bendich A, Frank E. Vitamin and mineral supplement use among us medical students: a longitudinal study. *J Am Diet Assoc.* 2006; 106: 1975-1983.
- [17] Spencer EH, Frank E, Elon LK, et al. Predictors of nutrition counselling behaviours and attitudes among US medical students. *Am J Clin Nutr.* 2006;84:655-62.
- [18] Gannagé-Yared M, Chemali R, Sfeir C, et al. Dietary calcium and vitamin D intake in an adult Middle Eastern population: Food sources and relation to lifestyle and PTH. *Int J Vitam Nutr Res.* 2005;4:281-89.
- [19] Loya AM, González-Stuart A, Rivera JO. Prevalence of polypharmacy, polyherbacy, nutritional supplements use and potential product interactions among older adults living on the United States-Mexico border: a descriptive, questionnaire-based study. *Drugs Aging.* 2009;26:423-36.
- [20] Raosoft sample size calculator. Raosoft, Inc. <http://www.raosoft.com/samplesize.html>. accessed November 2015.
- [21] Meysamie A, Taae F, Mohammadi-Vajari M, et al. Sample size calculation on web, can we rely on the results? *J Stats Med Inf.* 2014; doi: 10.7243/2053-7662-2-3.
- [22] McCrum-Gardner E. Sample size and power calculations made simple. *Int J Ther Rehabil.* 2010;1:10-14.
- [23] Alhalwachi S. Education Zone ICEF Dubai 2015. UAE the Education System and Study Abroad Trends. [Cited 2015 Jun 29]. Available from: http://www.icef.com/wpcontent/uploads/seminarprogramme/2015/dubai__prov__1600__Suad-Alhalwachi__UAE---The-Education-System-and-Study-Abroad-Trends.pdf. Accessed November 2015.
- [24] Snyder FJ, Dundas ML, Kirkpatrick C, et al. Use and safety perceptions regarding herbal supplements: a study of older persons in southeast Idaho. *J Nutr Elder.* 2009;28:81-95.
- [25] Owens C, Toone T, Steed-Ivie M. A Survey of Dietary Supplement Knowledge, Attitudes, and Use in a Rural Population. *J Nutr Food Sci.* 2014;5:1-5.
- [26] Al-Naggar RA, Chen R. Prevalence of vitamin-mineral supplements use and associated factors among young Malaysians. *Asian Pacific J Cancer Prev.* 2011;12:1023-29.
- [27] Suleiman AA, Alboqai OK, Yasein N, et al. Prevalence of vitamin-mineral supplement use among Jordan university students. *Saudi Med J.* 2008;29:1326-31.
- [28] Sharma A, Adiga S, Ashok M. Knowledge, Attitude and Practices Related to Dietary Supplements and Micronutrients in Health Sciences Students. *J Clin Diagn Res.* 2014;8:HC10-HC13.

- [29] Driskell JA, Krumbach CJ, Ellis DR. Vitamin and mineral supplement use among college Athletes. *J Am Diet Assoc.* 1998;98 Suppl 1:A17.
- [30] Herbold NH, Visconti BK, Frates S, et al. Driskell. Traditional and nontraditional supplement use by collegiate female varsity athletes. *Int J Sport Nutr Exerc Metab.* 2004;14:586-93.
- [31] Euromonitor International. Euromonitor International's Vitamins and Dietary Supplements in United Arab Emirates report. <http://www.reportlinker.com/p0703461-summary/Vitamins-and-Dietary-Supplements-in-the-United-Arab-Emirates.html>. Accessed December 2015.
- [32] Azizi M, Aghaei N, Ebrahimi M, et al. Nutrition knowledge, the attitude and practices of college students. *Facta Universitatis.* 2011;9:349-57.

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