Survey of nutrition knowledge of Kuwaiti health influencers in social media

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Summary. Objective: The aim of this study was to determine whether nutrition knowledge differs between male and female Kuwaiti health influencers in social media (Instagram). Design: A cross-sectional study was conducted to determine the nutrition knowledge of male and female Kuwaiti health influencers in social media (Instagram) utilizing a multiple-choice questionnaire with sixteen questions. Setting: Kuwaiti health influencers in social media (Instagram). Subjects: One hundred Kuwaiti health influencers (fifty males; fifty females) in social media (Instagram). Results: A response rate of 70% was accomplished (thirty-two males; thirty-eight females). The correctly answered questions had a mean percentage of 60% with averages of 65% and 60% for correct responses by males and females, respectively (P=0.039). Only, two questions demonstrated significantly different scores for male and female groups (P<0.05). The two age groups (<30 years; ≥30 years) displayed mean percentage scores of 61% and 63%, respectively (P=0.081). Conclusions: Kuwaiti health influencers in social media were unable to provide accurate information concerning common health problems including obesity, hypertension, and osteoporosis. (www.actabiomedica.it)

Key words: social media, Instagram, nutrition knowledge, influencers

Introduction

Out of all the risk factors affecting long-term health, lack of nutrition is considered to be the most amenable. A number of ailments including CVD, Type-2 diabetes, hypertension, and a variety of cancers are completely or partially related to poor diet. Improved diet and nutrition status have a significant positive impact on the final outcome of treatments and interventions used to deal with these types of diseases.

The use of searchable electronic information in the medical field by practitioners has been a common place for more than a decade now (1). Consumers and patients are also using electronic mediums with the help of the internet to find the health information they seek. Research in social media trends showed the increasing importance of internet searching to the consumer and patient. The impact on the consumer of cyber information is strong enough to warrant a change in the dynamics of health practitioner/patient relationship (2).

Since digital information can be published by anyone, it was evident that consumers of nutritional information from digital social media are negatively affected by the confusing messages provided by unreliable sources (3). A study investigating online health information quality in the US and the UK detected a frequent underestimation of risks and overestimation of benefits in 161 articles (4).

With the widespread of health information online, a lot of people resorted to social media to answer their health questions. Social media is defined as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user generated content” (5).

A study showed that parents looked on social networks and the web to decide if they should vaccinate
their children or not. Though the quality of information a person could obtain from internet sources about child vaccination can be misleading, most parents are depending on the information they get from the internet hoping this information will help improve their children’s health (6). Even chronic disease patients used the internet as a source of information for them. A study compared information on the internet related to type2 diabetes and how they matched the recommendations given by the American Diabetes Association; they found that the information on the internet is not as recommended by medical professionals (7).

In a recent study exploring the benefits and interest in social media (Facebook) to reach the parents of children with acute respiratory infections, researchers found that highly educated parents were interested in participating and using Facebook as a medium to discuss the medical aspects of the disease. Establishing a personal connection with the parent was also emphasized in the study for a successful communication (8).

Engagement of target populations by a social media outlet like Facebook was proven to be successful (9). However, the accuracy of posted information is sometimes questionable (10). In a study examining the accuracy of information posted in 2000 websites regarding effective methods of contraception, researchers found that the quality of information on so-called medical websites was variable and accurate information was mixed with inaccurate information. Readers were exposed to myths more than accurate medical information, which prompted the authors to recommend that clinicians be educated on which websites to use (10). With many people having trouble getting insurance coverage or access to legitimate healthcare providers, using the internet and social media may prove detrimental to health if the public was not educated on the criteria to choose the appropriate site of information (11).

The quality of nutritional information posted on the internet is questionable. Monitoring the accuracy of information is an important public health service. Even highly regarded medical websites scored poorly when it comes to credibility and accuracy (12). Dietitians and researchers have a role in providing consumers with the latest statistics and methods of finding the appropriate and accurate internet channels.

Although the social media have proven to be successful in reaching the public, the accuracy of the information it presents is still questionable at best (13). One of the best ways to enhance the accuracy of the information among Kuwaiti health influencers in social media is to identify their weaknesses and insufficiencies in their understanding first. Thus, this particular study was conducted with the intention of recognizing whether dissimilarities prevail or not in the nutrition knowledge among male and female Kuwaiti health influencers in social media.

Materials and methods

A cross-sectional study was carried out on arbitrarily chosen male and female Kuwaiti health influencers in social media. The sample size for this study was determined by ascertaining a 2% difference in the total percentage score of nutrition knowledge among participants of the two separate genders. Based on former studies (13, 14), a standard deviation of the total percentage score of nutrition knowledge of 2.74% was estimated. The effect size was determined by utilizing Cohen’s effect size measure (d) for comparing dissimilarities between the two separate groups. Each group had to be comprised of 31 subjects each, for the purpose of identifying the variance with a power of 80% at the two-sided significant level of 5%. With the intention of compensating for non-participation, the sample size was amplified up to 100 participants, 50 for each male and female group.

A questionnaire based on nutritional knowledge was developed and modifications were done from Alalfi (15). The first part of the questionnaire basically targeted general areas like gender, age, and area of specialty. In addition, the respondents were asked to rate themselves as to how they perceive their nutrition knowledge to be; poor, moderate, or excellent (15). The second part of the questionnaire comprised of sixteen multiple-choice questions, each having three likely responses. A pre-test was carried out for the questionnaire on eight college students, four males, and four females, for the purpose of evaluating the ability to comprehend the questions. Cognitive interviews (concurrent probes) were utilized in this regard. The ques-
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The SPSS statistical software package version 24.0 was utilized in analyzing data. Data were displayed in

Table 1. Nutrition knowledge questionnaire

1. What type of dietary fiber is helpful in lowering the blood cholesterol level?
   a. Soluble fiber*
   b. Insoluble fiber
   c. Cellulose

2. Excess of which nutrient may increase body calcium loss?
   a. Protein*
   b. Saturated fat
   c. Sugar

3. A nutrient believed to help prevent thrombosis is:
   a. Omega-3 fat*
   b. Monounsaturated fat
   c. Vitamin C

4. The adequate intake level of calcium for adult aged 51–70 years is:
   a. 500mg/d
   b. 1200 mg/d*
   c. 2000 mg/d

5. The major type of fat in olive oil is:
   a. Saturated fat
   b. Polyunsaturated fat
   c. Monounsaturated fat*

6. Compared with unprocessed vegetable oil, hydrogenated fats contain:
   a. More polyunsaturated fat
   b. More Trans fats*
   c. More cholesterol

7. Which nutrient is protective against hypertension?
   a. Potassium*
   b. Chlorine
   c. Iron

8. Which vitamin is likely to be toxic if consumed in an excess amount for a long period of time?
   a. Vitamin C
   b. Vitamin A*
   c. Vitamin D

9. The most concentrated source of vitamin B12 is:
   a. Fruit
   b. Whole grain cereals
   c. Meat*

10. Which substance raises the blood HDL-cholesterol level?
    a. Animal protein
    b. Riboflavin
    c. Alcohol*

11. In general, dietary recommendations are intended to:
    a. Maximize food efficiency
    b. Maintain public health*
    c. Increase athletic performance

(continued)
percentages and mean with the help of descriptive statistics and the percentages were rounded-off to the nearest whole value. The differences in nutrition knowledge by gender, age, and specialization were assessed utilizing a Student’s t-test.

Results

This particular study revealed a response rate of 70% (thirty-two males; thirty-eight females). Males were in the age range of 22–39 years with a mean of 27 years, whereas females were basically in the age range of 26–33 years with a mean of 30 years of age.

The correct responses to the questions in the entire sample had a mean score of 60% and males and females displayed averages of 65% and 60% respectively (P=0.039). A significant difference between the answers provided by both genders for most of the questions (P>0.05) could not be identified other than in questions 2 (P=0.008) and 8 (P=0.001). Table 2 displays the percentages of correct responses for the 16 questions by the entire sample and separate genders.

Table 3 demonstrates the differences in nutrition knowledge scores by age group (<30 years; ≥30 years).

Discussion

This study demonstrated a higher response rate (70%) than reported in previous studies such as the study conducted by Al-Numair (56%) in Saudi Arabia (16) and the study conducted by Hu et al. (17) among primary care physicians in Taiwan (27%). Furthermore, two separate surveys conducted to assess the nutrition knowledge of physicians by Temple (18) in Canada and Mlodinow and Barrett-Connor (19) in California demonstrated response rates of 36% and 40% respectively. In addition, the survey on nutrition knowledge of primary health care physicians in Jeddah, Saudi Arabia which was carried out by Al-Zahrani and Al-Raddadi (20) displayed approximately the same response rate as the current study.

When the mean score for correctly answered questions in this study (60%) was compared with other
Table 2. Percentages of correct answers to the nutrition knowledge questions, overall and according to gender, among Kuwaiti health influencers in social media (thirty-two males; thirty-eight females)

| Question                                                                 | % of correct answers | Overall | Males | Females | P value* | SED (%) |
|--------------------------------------------------------------------------|----------------------|---------|-------|---------|----------|---------|
| 1. Dietary fiber helpful in lowering blood cholesterol level             |                      | 45      | 46    | 44      | 0.914    | 13      |
| 2. Excess of which nutrient may increase body calcium loss               |                      | 39      | 54    | 39      | 0.008    | 10      |
| 3. Nutrient believed to help prevent thrombosis                          |                      | 76      | 74    | 76      | 0.754    | 11      |
| 4. Adequate intake level of calcium for adult aged 51–70 years           |                      | 58      | 63    | 58      | 0.351    | 11      |
| 5. Major type of fat in olive oil                                        |                      | 41      | 37    | 41      | 0.700    | 13      |
| 6. Hydrogenated fats contain                                             |                      | 55      | 66    | 55      | 0.203    | 12      |
| 7. Nutrient protective against hypertension                              |                      | 76      | 86    | 76      | 0.079    | 11      |
| 8. Vitamin likely to be toxic if consumed in excess amount               |                      | 55      | 75    | 55      | 0.001    | 10      |
| 9. Most concentrated source of vitamin B12                              |                      | 45      | 40    | 45      | 0.382    | 13      |
| 10. Substance raising blood HDL-cholesterol level                        |                      | 31      | 32    | 31      | 0.677    | 9       |
| 11. In general, dietary recommendations are intended to                 |                      | 68      | 62    | 68      | 0.252    | 8       |
| 12. Foods having preventive effect on various types of cancer           |                      | 87      | 90    | 88      | 0.214    | 13      |
| 13. Number of kilocalories in one gram of fat                           |                      | 85      | 89    | 85      | 0.154    | 12      |
| 14. Nutrient is not an antioxidant                                      |                      | 52      | 63    | 52      | 0.551    | 9       |
| 15. Nutrient associated with prevention of neural tube defects           |                      | 87      | 89    | 87      | 0.480    | 13      |
| 16. ‘Diet’ plans are usually successful at achieving weight loss because they |            | 57      | 66    | 57      | 0.533    | 12      |
| Mean score for correctly answered questions                             |                      | 60      | 65    | 60      | 0.039    | 11      |

*Based on independent-samples t test with df = 68.

Table 3. Percentages of correct answers to the nutrition knowledge questions, according to age group, among Kuwaiti health influencers in social media (thirty-two males; thirty-eight females)

| Question                                                                 | % of correct answers | <30 (n 51) | ≥30 (n 19) | P value* | SED (%) |
|--------------------------------------------------------------------------|----------------------|------------|------------|----------|---------|
| 1. Dietary fiber helpful in lowering blood cholesterol level             |                      | 40         | 46         | 0.352    | 12      |
| 2. Excess of which nutrient may increase body calcium loss               |                      | 32         | 54         | 0.314    | 8       |
| 3. Nutrient believed to help prevent thrombosis                          |                      | 62         | 74         | 0.254    | 7       |
| 4. Adequate intake level of calcium for adult aged 51–70 years           |                      | 90         | 63         | 0.651    | 12      |
| 5. Major type of fat in olive oil                                        |                      | 89         | 37         | 0.303    | 11      |
| 6. Hydrogenated fats contain                                             |                      | 63         | 66         | 0.179    | 8       |
| 7. Nutrient protective against hypertension                              |                      | 89         | 86         | 0.581    | 12      |
| 8. Vitamin likely to be toxic if consumed in excess amount               |                      | 66         | 75         | 0.633    | 11      |
| 9. Most concentrated source of vitamin B12                              |                      | 44         | 45         | 0.139    | 12      |
| 10. Substance raising blood HDL-cholesterol level                        |                      | 39         | 31         | 0.101    | 9       |
| 11. In general, dietary recommendations are intended to                 |                      | 76         | 68         | 0.482    | 10      |
| 12. Foods having preventive effect on various types of cancer           |                      | 58         | 88         | 0.777    | 10      |
| 13. Number of kilocalories in one gram of fat                           |                      | 41         | 85         | 0.108    | 12      |
| 14. Nutrient is not an antioxidant                                      |                      | 55         | 52         | 0.854    | 11      |
| 15. Nutrient associated with prevention of neural tube defects           |                      | 76         | 87         | 0.451    | 10      |
| 16. ‘Diet’ plans are usually successful at achieving weight loss because they |            | 55         | 57         | 0.825    | 9       |
| Mean score for correctly answered questions                             |                      | 61         | 63         | 0.081    | 10      |

*Based on independent-samples t test with df = 68.
similar studies, some variations could be identified. The mean score for correct responses in this study was comparatively lower than that of the survey of nutrition knowledge among physicians in Canada (63%) (18) whereas, it was relatively higher than the mean score observed (52%) by Al-Numair among physicians in Saudi Arabia (16). In addition, the same mean score in the California study (21) which was equivalent to 70% was higher than 60% in this study. However, it can be established that the true-false questions used in the California study had contributed to its relatively high mean score. Other studies that used multiple-choice questions such as Kirby et al. (21) and Al-Zahrani and Al-Raddadi (20) also displayed low mean scores of 51% and 52%, respectively, similar to this particular study.

According to the results of this study (Table 2), social media influencers had a good understanding of the information related to nutrition published in media including the role of n-3 fatty acids, foods and nutrients that are protective against cancer, hypertension, neural tube defects, and number of kilocalories in one gram of fat. Quite noticeably, these facts represent the questions 3, 7, 11, 12, 13 and 15 of the nutrition knowledge questionnaire. Similar findings were reported in the studies conducted by Al-Numair (16) and Temple (18). Still, relatively a low number of social media influencers could provide correct responses to the questions comprised of information that have a less tendency to get publicized in the medical press (questions 1, 2, 4, 5, 6, 8, 9, 10, 14 and 16) such as the role of soluble fiber in lowering blood cholesterol level, the effect of consuming too much protein on body calcium, the adequate intake level of calcium, the major type of fat in olive oil and hydrogenated fats, and the functions and sources of different vitamins and minerals.

Conclusions

By and large, the outcomes of this study reveal the inadequacy of nutrition knowledge among Kuwaiti health influencers in social media. Furthermore, educating the public on what to expect and how to seek the correct information becomes a public service that nutrition and medical professionals have to be involved in.

The use of social media and social networking is increasing across all ages and more so in the younger generation. It is becoming more important to study their exposure and how to use it to their benefit. With low medical and health related education in the Middle East, it becomes more important to know how social networking trends are working to improve or demote the health status of the population.

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References

1. Van Woerkum, CM. Media choice in nutrition education of general practitioners. The American j of clinical nutrition 1997; 65(6): 2013S-2015S.
2. McMullan M. Patients using the Internet to obtain health information: how this affects the patient–health professional relationship. Patient education and counseling 2006; 63(1): 24-28.
3. Leslie P. Food Literacy: How Do Communications and Marketing Impact Consumer Knowledge, Skills, and Behavior? Workshop in Brief. 1st ed. Washington DC: The National Academies Press 2015; pp. 23-56.
4. McCaw BA, McGlade, KJ, McElnay JC. Online health information–what the newspapers tell their readers: a systematic content analysis. BMC public health 2014; 14(1): 1316-1322.
5. Kaplan AM, Haenlein M. Users of the world, unite! The challenges and opportunities of Social Media. Business horizons 2010; 53(1): 59-68.
6. Stahl JP, Cohen R, Denis F, et al. The impact of the web and social networks on vaccination. New challenges and opportunities offered to fight against vaccine hesitancy. Medecine et maladies infectieuses 2016; 46(3): 117-122.
7. Post RE, Mainous AG. The accuracy of nutrition information on the Internet for Type 2 diabetes. Archives of internal medicine 2010; 170(16): 1504-1506.
8. Dyson MP, Shave K, Fernandes RM, Scott SD, Hartling L. Outcomes in Child Health: Exploring the Use of Social Media to Engage Parents in Patient-Centered Outcomes Research. Journal of medical Internet research 2017; 19(3): 59-68.
9. Russell DJ, Sprung J, McCauley D, et al. Knowledge Exchange and Discovery in the Age of Social Media: The Journey From Inception to Establishment of a Parent-Led Web-Based Research Advisory Community for Childhood Disability. Journal of medical Internet research 2016; 18(11): 117-122.

10. Madden T, Cortez S, Kuzemchak M, Kaphingst KA, Politi MC. Accuracy of information about the intrauterine device on the Internet. American journal of obstetrics and gynecology 2016; 214(4): 499-506.

11. Amante DJ, Hogan TP, Pagoto SL, English TM, Lapane KL. Access to care and use of the Internet to search for health information: results from the US National Health Interview Survey. Journal of medical Internet research 2015; 17(4): 499-506.

12. Gkouskou K, Markaki A, Vasilaki M, Roidis A, Vlastos I. Quality of nutritional information on the Internet in health and disease. Hippokratia 2011; 15(4): 304-310.

13. Newbold KB, Campos S. Media and social media in public health messages: A systematic review. Recuperado el 2011; 170(16): 1504-1506.

14. American Medical Association. Professionalism in the use of social Media. 2011. Available from: https://www.ama-assn.org/sites/default/files/media-browser/public/about-ama/councils/Council%20Reports/council-on-ethics-and-judicial-affairs/i10-ceja-professionalism-use-social-media.pdf [cited: 26th Feb 2018].

15. Allafi AR, Alajmi F, Al-Haifi A. Survey of nutrition knowledge of physicians in Kuwait. Public Health Nutrition 2012: 16(7): 1332-1336.

16. Al-Numair KS. Nutrition knowledge of primary care physicians in Saudi Arabia. Pak J Nutr 2004: 3, 344–347.

17. Hu SP, Wu MY, Liu JF. Nutrition knowledge, attitude and practice among primary care physicians in Taiwan. Journal of the American College of Nutrition 2013: 16(5): 439-442.

18. Temple NJ. Organized medicine. An ounce of prevention or a pound of cure. In Handbook of Western Diseases: Their Dietary Prevention and Reversibility. Totowa, NJ: Humana 1994; pp. 381-398.

19. Mlodinow SG, Barrett-Connor E. Physicians and medical student’s knowledge of nutrition. Acad Med 1989; 64: 105-106.

20. Al-Zahrani AM, Al-Raddadi R. Nutritional knowledge of primary health care physicians in Jeddah, Saudi Arabia. Saudi Med J 2009; 30: 284-287.

21. Kirby RK, Chauncey KB, Jones BG. The effectiveness of a nutrition education program for family practice residents conducted by a family practice resident-dietitian. Fam Med 1995; 27: 576-580.