A survey on cancer-related nutritional information in Iranian popular magazines

Ourfa Hovsepyan, Firoozeh Zare-Farashbandi, Gholamreza Askari[1]

Department of Library and Information Sciences, School of Management and Medical Information, [1]Department of Community Nutrition, School of Nutrition and Food Science, Isfahan University of Medical Sciences, Isfahan, Iran

ABSTRACT

Background: Due to the wide influence of public media, they become important communication channels for changing health beliefs and behaviors. One of the areas that have gained increased attention in public media is nutritional information. Cancer is one among the diseases related to nutrition. The goal of this study is to do a content analysis of the popular magazines in Iran for nutritional information related to cancer in year 2012–2013. **Materials and Methods:** This is an applied survey performed using content analysis method. The data gathering tool is a checklist designed by the researcher. The statistical population consisted of all of the messages printed in 173 volumes of eight most popular magazines which were selected based on their characteristics by searching the Iranian publication database using certain inclusion and exclusion criteria. The sample size calculated using non-probability – purposive sampling was 295 messages from 96 magazine volumes. **Results:** Findings showed that prevention trends had the highest (86.8%) and treatment had the lowest (4.7%) frequency in the messages. Pomegranate was the most commonly mentioned preventive food, while mayonnaises were the most commonly mentioned carcinogen and tangerine was the most commonly mentioned food used for cancer treatment. Among the different types of cancer, more than half of the messages (51.2%) mentioned "cancer" as a general term. After that, breast cancer (13.2%) and prostate cancer (10.51%) were the most commonly motioned cancers and messages regarding pancreatic cancer and hormone-related cancers were the least frequent (0.3%). **Conclusions:** The findings of this study show that the main goal of these messages was to increase the information provided to the readers, although some doubts regarding the scientific credibility of the claims made in these messages still remain.

Key words: Cancer, content analysis, magazines, nutrition, popular

INTRODUCTION

Address for correspondence: Dr. Firoozeh Zare-Farashbandi,
Department of Library and Information Sciences,
School of Management and Medical Information,
Isfahan University of Medical Sciences, Isfahan, Iran.
E-mail: f_zare@mng.mui.ac.ir

Sociologists have been interested in mass media content since the early 20th century, starting with Max Weber who saw media content as a means of monitoring the "cultural change" of the society. After that, media content analysis was introduced as a systematic method to study mass media by Harold Lasswell (1927). He believed that media content analysis refers to who says what, through which channel, to whom, and with what effect.[1]

Mass media is an important and influential element in the knowledge transfer and dissemination process, playing an important role in conveying scientific information to people and policy makers and having an undeniable role in affecting

the public opinion and social behaviors.[2] Therefore, the content of the media is considered to be very important.

One of the areas that have gained increased attention in the popular media in recent years is nutritional information. Media intervention can change the people's nutritional behavior in three ways: by informing people about diets and their effects on certain maladies, by influencing people to change their nutritional behavior, and by giving appropriate support to changes in social, structural, and economical factors leading to effective diets.[3] People also show great interest in searching for nutritional information related to their diseases. Cancer is a disease that is significantly affected by a person's diet. According to the World Health Organization (WHO) report 2008, annually 7.6 million people lose their lives because of different types of cancer worldwide, which is 13% of the total number of deaths.[4] Of this, 60% belong to the developing countries.[5] Cancer is the third most frequent cause of death in Iran also.[6] Some studies show that paying attention to quality of life can be effective in prevention and treatment of cancer.[7] Diet is among the main environmental causes of cancer and plays an important role in 30–40% of reported cases.[8] On the other hand, diet plays a vital role in the management of cancer because nutrients are the source of important physiologically functional components.[9] Several studies investigated the health content of different media in Iran and other countries that some of which are as follows.

Niknam and Azadbakht conducted a study called "Nutrition and gastric cancer: A review of epidemiologic evidences." Their findings suggest that the risk of gastric cancer decreases with high intake of fruits and fresh vegetables and possibly with green tea consumption, and increases with the intake of various processed meat products, salt, and salted foods. There is no clear evidence about the relationship between gastric cancer and various meat products, fish, black tea, and coffee. These results suggested that changing the diet toward fruits and fresh vegetables and decreasing the consumption of salt, salted foods, and processed meat products can be considered an important strategy in prevention of gastric cancer.[10]

Shokri Mashhadi and Azadbakht, in their study titled "Food groups and breast cancer: A review of current evidence," reported that according to some studies, dietary patterns rich in vegetables and with less meat and processed food are related to reduced risk of breast cancer.

However, a number of other studies have not obtained such results suggesting that the consumption of certain vegetables and fruits is much more important in reducing the risk of breast cancer than the consumption of all kinds of vegetables. Consumption of processed meat has been consistently reported as a factor in enhancing the risk of breast cancer.[11]

Amini *et al.* conducted a study titled "Which foods do TV food advertisements entice our children to eat?" and reported that puffed cereals comprised the largest category (36%) of advertised foods and snacks (such as different puffed cereals, cakes and biscuits, and soft drinks) were the most frequently advertised. Also, the most frequent quality advertised was "having special nutrition" and the most common goal of these advertisements was "stimulation of hunger/thirst."[12]

Mohammadpour Mohammadpour ahranjani, in his study titled "Nutritional messages in Iranian newspapers: A content analysis," showed that 79.5% of the newspaper contents were informative, 9.6% of them were educational, and 18.1% of the contents were a mixture of these two. Also, the author of 13.9% of the articles was a nutritionist. Islamic Republic of Iran News Agency (IRNA), a reputed scientific organization, and IRIB News were the sources of 23 and 18.9% of the articles, respectively. Also, 29.5% of the contents had a positive and 47.5% of them had a negative outlook.[3]

Maheshwar and Rao, in a study titled "A comparative analysis of nutrition science coverage by popular Indian daily newspapers," reported that English dailies gave more coverage on obesity, beverages, and chocolates, whereas Telugu dailies confined mostly to the traditional foods, promoting consumption of natural foods. They also reported that overall, the topic of fruits and vegetables was widely covered and most frequently appeared in all the daily newspapers in the study, while seasonal and junk foods were the least frequent.[13]

Smith *et al.,* conducted a study titled "Print news coverage of cancer: What prevention messages are conveyed when screening is newsworthy?" Their findings showed that articles related to treatment and survivorship were the most frequent. Also, breast cancer screening was the focus of 30% of the articles and prostate cancer screening was the focus in 25%. Lung and ovarian cancer screening each accounted for about 10% of screening coverage. Screening for colorectal, oral, and pancreatic cancers each yielded two articles, and both cervical and skin cancers yielded one article each. Also, it considered the subset of 14% of the articles that focused on screening in general, without highlighting one type of cancer.[14]

Larson *et al.,* conducted a study titled "A content analysis of cancer survivorship coverage in a representative sample of U.S. news outlets" which showed that news stories about survivors who had breast or prostate cancer contained less survivorship tips than those about survivors with other cancers. Likewise, stories about survivors who had stigmatized cancers (i.e., lung and colorectal cancers, and reproductive organ cancers defined as cervical, ovarian, uterine, vaginal, testicular, or penile) had less survivorship tips than the stories about survivors with other types of cancer.[15]

Jones *et al.,* published an article titled "The extent and nature of 'health messages' in magazine food advertising in Australia." Their results showed that the most frequently occurring food categories utilizing a health message in an advertisement were dairy and dairy substitutes, closely followed by fruit and fruit juice. Overall, 31 advertisements referred to a specific disease, health problem, or a risk factor, and the

most commonly mentioned were heart disease/heart-attack, cancer, and diabetes.[16]

Lovejoy, in his study titled "A content analysis of cancer news coverage in Appalachian Ohio community," reported that non-specific cancer (i.e., "cancer") was the dominant cancer and was found in two-thirds of the articles (67%), followed by breast cancer (23%) and colorectal cancer (3%). Also, the most frequent articles were about fundraisers and the least frequent ones were about treatment and detection methods.[17]

Investigation of related past articles shows that most of the content appearing in the media was about breast and prostate cancers. The media also emphasize on the increased use of fruits and vegetables and decreasing the consumption of processed foods. The content appearing in the media also depends on whether it is promotional in nature or not. However, in general, most of the nutritional information in the media is about the prevention of diseases such as cancer rather than about their treatment.

Therefore, the goal of the present study is content analysis of cancer-related nutritional information in the popular magazines of Iran. This study aims to use content analysis of popular magazines to identify the trends in the published messages regarding the type of cancer, types of food, and their effects on cancer. This study will also try to identify the most important messages appearing in these magazines. The results of this study will help to identify the strengths and weaknesses of the nutritional information of these magazines and improve the quality of published health information, especially in popular media.

MATERIALS AND METHODS

This study is a content analysis and uses applied survey method. The statistical population consists of all the messages published in 173 volumes of eight Iranian popular magazines selected based on the characteristics of the magazines[18] and the search carried out in Iranian magazine database, mageiran (www.magiran.com), using the inclusion criteria of having nutritional information and accessibility and the exclusion criteria of not having nutritional information and lack of availability. These magazines were weekly magazines, i.e. Weekly Information (Etelaat-e-Haftegi), biweekly magazines, i.e. Days of Our Lives (roozhaye zendegi), Success (Movafaghiat), Family (Khanevadeh), Green Family (Khanevade-e-sabz), and monthly publications, i.e. Psychology of Happiness and Success (Ravanshenasi-e-Shadkami VA Movafaghiat) and Family Counselor (Moshaver-e-Khanevadeh), and Woman's Message (Payam-e-Zan). The sample size was calculated to be 295 messages in 96 magazine volumes based on non-probability – purposive sampling method.

The data gathering tool was a checklist created by the researcher whose content validity was approved by experts. The components of this checklist were: (a) magazine description, (b) message description, (c) thematic orientation of the message based on the type of cancer (including 15 different cancers), (d) thematic orientation of the message based on food category (including seven food categories), and (e) thematic orientation of the message based on its effect on the disease (prevention, cancer causes, and treatment). Assortment of food type was based on the food categories presented by Tabriz University of Medical Science and Center for Disease Control and Prevention (CDC).[19,20]

For this study, first the messages regarding cancer were extracted, coded, and added to the checklist by the researcher using content analysis. Then the gathered data were analyzed using Excel software, and frequency and frequency percent were calculated using descriptive statistics.

RESULTS

Two hundred and ninety-five messages regarding cancer were extracted from 96 magazine volumes (nearly three messages per volume), among which 66 messages (22.4%) appeared in the magazine Days of Our Lives, 59 (20%) in Message to women, 55 (18.6%) messages in Weekly Information, 47 messages (15.9%) in Family Counselor, 30 messages (10.2%) in Family, 26 messages (8.8%) in Success, 7 messages (2.4%) in Green Family, and 5 messages (1.7%) appeared in Psychology of Happiness and Success magazine.

Figure 1 categorizes the nutritional messages based on their effect on the disease. It shows that 86.8% of these messages were about cancer prevention, 8.5% were about cancer treatment, and 4.7% were about cancer caused by a certain food type.

Table 1 shows the thematic orientation of the investigated messages based on the type of food and type of cancer in three groups of prevention, cancer causes, and treatment. Based on the results, pomegranate was the most frequent preventing food, mayonnaises the most frequent cancer-causing food, and tangerine was the most frequent food used for cancer treatment. Also, based on the cancer type, the general term of "cancer" was the most frequent in all three categories (prevention, treatment, and cancer causes). After that, in the prevention and cancer causes, breast and prostate cancers were the most frequent, while in the treatment category, prostate and ovarian cancers were the most frequently mentioned.

Figure 2 shows the frequency based on the cancer type. It can be seen that the general term "cancer" was mentioned in 51.2% of the messages, breast cancer in 13.2%, and prostate cancer in 10.51% of the messages. On the other hand, hormone-dependent cancer and pancreatic cancer were the least frequent with 0.3% of the total messages.

Figure 3 shows the frequency of the seven different food categories in the investigated messages. The findings showed that the elements present in different foods were the most
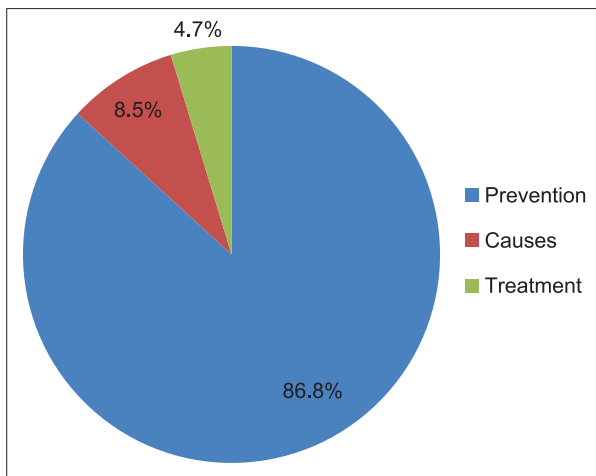
Figure 1: Percent of the cancer-related messages based on their effects on the disease
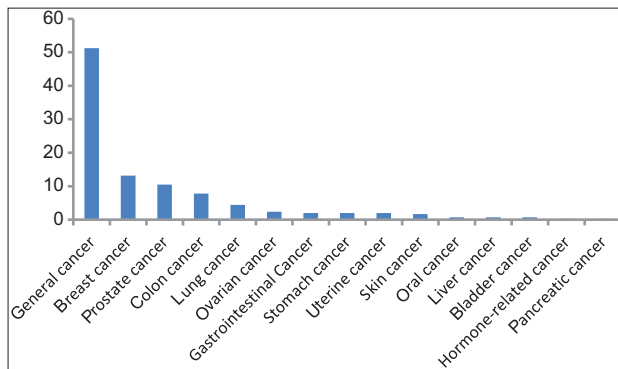

Figure 2: The frequency of cancer types in the investigated messages
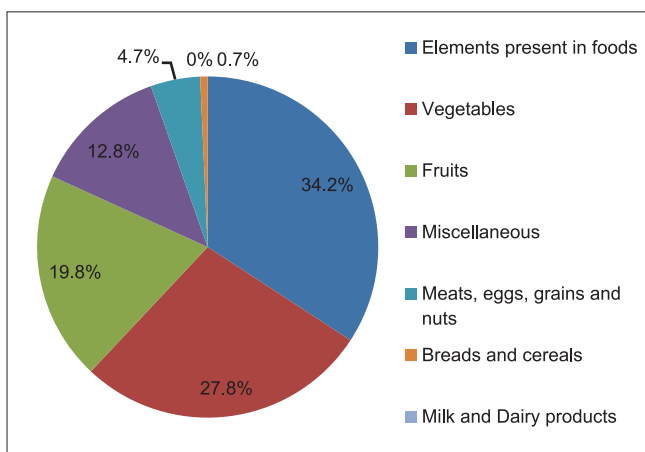

Figure 3: The frequency of different food categories in the investigated messages

frequent (34.2%) and dairy products with no messages were the least frequent food category.

Table 2 shows the foods that appear with the highest frequency in the investigated messages. The results showed that the cancer-related nutritional messages in these

magazines tended to focus more on the elements present in the foods (such as antioxidants) instead of the foods themselves. Also, antioxidants from the elements present in the foods, onion from the vegetables group, pomegranate from the fruits group, coffee from the miscellaneous foods, walnut from the meats, eggs, grains, and nuts group, and corn and sweet corn from bread and cereals group were the most frequently mentioned foods.

Finally, by using multi-stage refining, 10 messages from popular magazines which had the highest importance were selected, and they are presented in Table 3. In other words, these 10 messages are the most important messages appearing in the popular magazines.

DISCUSSION

Investigation of similar studies shows that there had been several content analysis studies of the media content for topics related to nutritional information or cancer both internationally and in Iran, although there are noticeably less studies conducted in Iran. However, little has been done to study a combination of these two topics even at an international scale. The novelty of the present study is that it analyzes the content of public media and not that of academic publications because public media have a far greater influence on the public behavior compared to academic publications. Since most people are unable to understand the academic language of academic publications, they tend to search for the required medical and health information in the internet or public media.[21,22]

In this study, 295 cancer-related nutritional messages were selected from 96 volumes of popular magazines. It is necessary to note that these messages were extracted from articles and it was possible to extract more than one message from a single article. In general, the results show that despite the specialized nature of cancer-related nutritional messages, a large portion of nutritional messages in popular magazines were related to cancer (three messages per volume).

It was found in this study that the least number of messages based on food type belonged to dairy products. However, based on the findings of Jones, dairy products take up the majority of messages in promotional magazines.[16] The results also showed that the messages regarding elements present in foods (such as antioxidants), vegetables, and fruits were the most frequent, which is in agreement with the findings by Amini *et al.*[12] who reported that elements present in different foods take up the majority of the content present in television advertisements. Ignoring the elements present in the foods, it can be said that these findings are in agreement with the findings by Maheshwar and Rao[13] and Jones[16] who reported that vegetables and fruits were the most frequently mentioned in the messages present in Indian newspapers and magazine advertisements.

This study showed that after the general term "cancer," the popular magazines concentrated more on breast and

Effect of message on the disease	Total frequency	Total percent	The most frequently mentioned	Frequency	Percent
Prevention	256	86.8	Based on food type		
			Pomegranate	21	8.2
			Antioxidants	20	7.8
			Onion	14	5.5
			Others	201	78.5
			Total	256	100
			Based on cancer type		
			General cancer	128	50
			Breast cancer	34	13.3
			Prostate cancer	27	10.5
			Others	67	26.2
			Total	256	100
			Based on food type		
Cancer causes	25	8.5	Mayonnaises	3	12
			Sausages and salami	3	12
			Nitrosamines	2	8
			Others	17	68
			Total	25	100
			Based on cancer type		
			General cancer	19	76
			Breast cancer	3	12
			Prostate cancer	1	4
			Others	2	8
			Total	25	100
			Based on food type		
Treatment	14	4.7	Tangerine	4	28.6
			Turmeric	3	21.4
			Salvestrols	3	21.4
			Others	4	28.6
			Total	14	100
			Based on cancer type		
			General cancer	4	28.6
			Prostate cancer	3	21.4
			Ovarian cancer	2	14.3
			Colon cancer	2	14.3
			Breast cancer	2	14.3
			Others	1	71
			Total	14	100

Table 1: Thematic orientation of the cancer-related messages in popular magazines based on the effects on the disease

prostate cancers, which is in agreement with the findings of Smith[14] about the coverage of printed news related to cancer and of Lovejoy[17] about cancer-related articles in the newspapers. Smith also reported that gastrointestinal, oral, cervical, pancreatic, and skin cancers were mentioned in a negligible number of messages,[14] which is in partial agreement with the findings of the present study which shows low frequency of messages regarding skin, uterine, oral, and pancreatic cancers. However, if the sum of all messages about colon, stomach, liver, and gastrointestinal cancers is considered as the total number of messages regarding gastrointestinal cancer, this group will become the third most frequently mentioned cancer instead of prostate cancer.

Regarding the effect of the messages on the disease, unlike Smith's study that reported messages regarding cancer treatment to be the most frequent,[14] this study showed that most messages in the investigated magazines were about cancer prevention and painted a positive outlook. These findings were also opposite of the findings of Mohammadpour Mohammadpour Ahranjani[3] who reported the messages with a negative outlook to be more frequent. Other related studies are generally about changes in the nutritional behaviors that can help prevent certain types of cancer.

Also, the content analysis of the messages in this study showed that all the cancer-related messages were noncommercial in nature and only aimed to inform people, which is in agreement

Table 2: Foods based on the frequency in which they are mentioned in cancer-related messages					
Food type	**Frequency**	**Percent**	**The most frequent food**	**Frequency**	**Percent**
Elements present in foods	102	34.2	Antioxidants	20	19.6
			Lycopene	12	11.7
			Fiber	8	7.8
			Others	62	60.9
			Total	102	100
Vegetables	83	27.8	Onion	14	16.9
			Tomato	13	15.7
			Garlic	9	10.84
			Others	47	56.56
			Total	83	100
Fruits	59	19.8	Pomegranate	22	37.3
			Lemon	7	12
			Tangerine	5	8.5
			Other	25	42.2
			Total	59	100
Miscellaneous	38	12.8	Coffee	7	18.43
			Green tea	4	10.53
			Turmeric	4	10.53
			Others	23	60.51
			Total	38	100
Meat products, eggs, grains, and nuts	14	4.7	Walnut	3	21.42
			Soya	2	14.23
			Pumpkin seeds	2	14.3
			Others	7	50.05
			Total	14	100
Breads and cereals	2	0.7	Corn	1	50
			Grains	1	50
			Others	0	0
			Total	2	100
Milk and dairy products	0	0	-	-	-
			Total	0	0

Table 3: Subjects based on importance given in the nutritional messages of the popular magazines of Iran	
Importance	**Subject**
1	Antioxidants - cancer - prevention
2	Pomegranate - prostate cancer - prevention
3	Onion - cancer - prevention
4	Tangerine shell - cancer- treatment
5	Sausages and salami - cancer- cause
6	Mayonnaise - cancer - cause
7	Coffee - cancer- prevention
8	Coffee - skin cancer - prevention
9	Coffee - prostate cancer - prevention
10	Walnut - breast cancer - prevention

with the findings of Mohammadpour Mohammadpour Ahranjani[3] about Iranian media and of Maheshwar and Rao[13] about Indian newspapers.

The results of this study show that the articles printed in the Iranian media are not coordinated with the needs of Iranian sociality because based on the national report of cancer cases in the year 2008–2009,[23] the five most common types of cancer in Iran are skin, breast, stomach, colon and rectum, and gastrointestinal cancers. However, the messages regarding skin, stomach, and bladder cancers had a very low frequency in the popular magazines. On the other hand, a report by WHO[4] identifies lung, stomach, liver, colon, and breast cancers as the five most common types of cancer worldwide, and in the present study, messages regarding lung, colon, and breast cancers had the highest frequency. This means that the messages in the popular magazines of Iran are more in line with the needs of the international community than the needs of Iranian society. Also, the increased mention of "cancer" as a general term shows that Iranian media tend to generalize the health information, which can be due to limited use of experts or related scientific resources in preparation of their articles. This shows the importance of authenticity and accuracy of the health information published in public media.

On the other hand, the results of this study show that the articles in Iranian popular magazines have a positive orientation regarding prevention of cancer using healthy foods such as fruits and vegetables, which is in line with the WHO guidelines.[4]

In general, it seems that cancer-related nutritional messages in the popular magazines of Iran (as a representative of Iranian media) are not based on the needs of Iranian society, and although some aspects of these messages, such as their noncommercial nature, show high ethics among the journalists, some concerns remain about the authenticity and accuracy of the health information published in public media.

To conclude, this survey tried to show a general picture of the cancer-related nutritional messages (both correct and incorrect messages) published in Iranian popular media to the experts in the fields of medicine and health care and to emphasize the necessity of investigating the authenticity and accuracy of these published messages.

REFERENCES

1. Macnamara J. Media content analysis: Its uses, benefits and best practice methodology. Asia Pac Public Relat J 2005;6:1-34.
2. Ashorkhani M, Gholami J, Maleki K, Nedjat S, Mortazavi J, Majdzadeh R. Quality of health news disseminated in the print media in developing countries: A case study in Iran. BMC Public Health 2012;12:2-7.
3. Mohammadpour Mohammadpour ahranjani B, Abdollahi M, Pakravan M. Nutritional messages in Iranian newspapers: A content analysis. Payesh 2003;2:63-71.
4. World Health Organization. Cancer. Geneva: WHO; 2012. Available from: http://www.who.int/mediacentre/factsheets/fs297/en/index.html. [Last accessed on 2013 Dec 15].
5. Mokarian F, Ramezani MA, Heydari K, Tabatabaeian M, Tavazohi H. Epidemiology and trend of cancer in Isfahan 2005-2010. J Res Med Sci 2011;16:1228-33.
6. Abolghasemi H. A preface. 2011. Available from: http://crc.sbmu.ac.ir. [Last accessed on 2013 May 10].
7. Musarezaie A, Ghasemi TM, Esfahani HN. Investigation the quality of life and its relation with clinical and demographic characteristics in women with breast cancer under chemotherapy. Int J Prev Med 2012;3:853-9.
8. Mirbazegh SF, Rahnavard Z, Rajabi F. The effect of education on dietary behaviors to prevent cancer in mothers. J Res Health 2012;2:108-17.
9. Pal D, Banerjee S, Kumar Ghosh A. Dietary-induced cancer prevention: An expanding research arena of emerging Diet Related to Healthcare System. J Adv Pharm Technol Res 2012;3:16-24.
10. Niknam M, Azadbakht L. Nutrition and gastric cancer: A review of epidemiologic evidences. Health Syst Res 2012;8:724-38.
11. Shokri Mashhadi N, Azadbakht L. Food groups and breast cancer: A review of current evidence. Health Syst Res 2012;8:739-47.
12. Amini M, Mohsenian Rad M, Kimiagar M, Omidvar N. Which foods do TV food advertisements entice our children to eat? Iran J Nutr Sci Food Technol 2007;2:49-57.
13. Maheshwar M, Rao RD. A comparative analysis of nutrition science coverage by popular Indian daily newspapers. J Media Commun Stud 2011;3:131-43.
14. Smith K, Kromm E, Klassen A. Print news coverage of cancer: What prevention messages are conveyed when screening is newsworthy? Cancer Epidemiol 2010;34:434-41.
15. Larson S, Long M, Slater M, Bettinghaus E. A content analysis of cancer survivorship coverage in a representative sample of U.S. News Outlets. J Cancer Educ 2009;24:291-6.
16. Jones SC, Andrews KL, Tapsell L, Williams P, McVie D. The extent and nature of "Health Messages" in magazine food advertising in Australia. Asia Pac J Clin Nutr 2008;17:317-24.
17. Lovejoy J. A content analysis of cancer news coverage in appalachian Ohio community newspapers. Athens, Ohio, United States: Ohio University; 2007.
18. Bahrampour SH. The characteristic of Iranian popular magazines. Rasaneh 2004;15:81-92.
19. Centers for Disease Control and Prevention. Nutrition for Everyone, Food groups. 2012. Available from: http://www.cdc.gov/nutrition/everyone/basics/foodgroups.html. [Last accessed on 2013 Sep 20].
20. Matlabi M. Food Categories. 2013. Availabli from: http://www.eazphcp.tbzmed.ac.ir/?pageid=1166. [Last accessed on 2013 May 20].
21. van Trigt AM, de Jong-van den Berg LT, Voogt LM, Willems J, Tromp TF, Haaijer-Ruskamp FM. Setting the agenda: Does the medical literature set the agenda for articles about medicines in the newspapers? Soc Sci Med 1995;41:893-9.
22. Westerman D, Spence PR, Van Der Heide B. Social media as information source: Recency of updates and credibility of information. J Comput Mediat Commun 2014;19:171-83.
23. Aghajani H. Iranian annual of national cancer registration report 2008-2009. Tehran: Ministry of Health and Medical Education, Center for Disease Control and Prevention, Cancer Office; 2011.