Int J Nutr Sci 2022;7(2):90-95

International Journal of Nutrition Sciences

Journal Home Page: ijns.sums.ac.ir

ORIGINAL ARTICLE

Sources of Nutritional Information among Adults

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ARTICLE INFO

Keywords:
Social media
Nutrition
Information
Source
Iran

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Received: February 11, 2022
Revised: May 12, 2022
Accepted: May 19, 2022

ABSTRACT

Background: Diet-related information, behaviors, and attitudes are significant factors for building healthier nutritional patterns and preventing diseases.This study aimed to investigate the people's preference of sources of nutritional information and the most effective sources.

Methods: This descriptive online study was conducted in Shiraz, Iran. Recruitment of the participants was started in February 2020 and ended in March 2020. All 235 male and female participants were enrolled using simple randomization. Demographic variables and nutritional information sources were collected by an online questionnaire. The questionnaire consisted of two parts including the first part containing demographic questions and the mostly used sources of nutritional information according to priority and the second part consisted of 12 questions about the most effective nutritional sources. Continuous data with normal distribution were expressed in number (%), and qualitative variables were assessed by Chi-Square test.

Results: The most common and effective sources of nutritional information among the paricipants were social media (87%) and Instagram (41%), respectively. There was a significant difference between age and level of education in selecting effective sources of information ($p \leq 0.001$, $p \leq 0.001$, respectively).

Conclusion: Social media was recognized as the most effective source of nutritional information. In addition, more comprehensive studies that can survey all the influential factors in this field were suggested.

Please cite this article as: Hamidianshirazi M, Ekramzadeh M, Nouri M. Sources of Nutritional Information among Adults. Int J Nutr Sci. 2022;7(2):90-95. doi: 10.30476/IJNS.2022.95548.1188.

Introduction

Nutritional knowledge (1) and healthy eating play a vital role in health maintenance (2, 3) and components to prevent or treat disease (2, 4-6). Reliable nutritional information allows people make appropriate food choices (7). Eating habits and attitudes are influenced by nutritional knowledge (1, 8). Reliable nutritional information allows people make appropriate food and diet (1, 9-11) choices (7). Sources of information include media, health professionals, physicians, friends and family members, the Internet, and books (12-19). Food labels help individuals to make informed food choices (8, 12). Various factors (age, economical status, level of education, and even illness) affect the preference of nutritional information sources (20, 21).

The role of the dietician is important in choosing

the appropriate diet (22) and improving nutritional information in the society (23, 24). Despite the general interest in getting nutritional information, few studies have evaluated various sources of nutritional information in the population (12). So far, no study has been conducted to determine the most effective and practical nutritional information sources in Iran. Therefore, the purpose of this study was to assess the participants' preferences of nutritional information sources and the effectiveness of the resources.

Materials and Methods

We conducted an online survey among 238 participants in Shiraz University of Medical Sciences, Shiraz, Iran. This descriptive study was performed from February to March 2020. The study protocol was in accordance with the Declaration of Helsinki and Good Clinical Practice guidelines and approved by the Ethics Committee of Shiraz University of Medical Sciences (IR.SUMS.REC.1399.1289) and the study was financially supported by the Research Vice Chancellor of Shiraz University of Medical Sciences (Grant No. 22605). Written informed consent was obtained from each eligible participant. The sample size was determined based on similar articles and considering the power of 80%, α=0.05 (25).

The paticipants of both sexes aged 18-55 years met the inclusion criteria. The exclusion criteria limited the study population by eliminating individuals who were pregnant, had mental and physical illnesses, were illiterate, and were unwilling to participate or follow a particular diet. In this simple randomized study, we considered the inclusion and exclusion criteria in selecting the participants. The indiviuals consecutively entered the study. To assess the preferences and effectiveness for sources of nutritional information, an online questionnaire was filled at baseline of the study through interview by shareing the link that was created in Google Sheets.

This questionare was considered as a validated assessment tool by 7 specialists in nutrition and food sciences. Reliability was tested on another population of 50 paticipants by trained interviewers over 30 days. It was mainly based on several studies regarding the effects and reliability of various sources of nutritional information (26-28). Finally, the questionnaire was consisted of two parts of (i) 12 questions to express the most effective means of obtaining food information and demographic data and (ii) questions based on the mostly used sources of food information. Each of these sources were ranked as 1 to 12 which show the most commonly used food information source. Then, these measures were converted to numerical values. The score below 10 points was interpreted as the least used resources, and the score higher than 20 points was regarded as the most used resources.

Sources of nutritional information classification based on effectiveness were as follows: (i) Social media (Instagram, Telegram, Health websites, WhatsApp, Mobile Health Software, other cyberspace sections Like Facebook); (ii) Television programs (wellness programs, television commercials, cooking programs, subtitles, satellite, programs, and TV competitions); (iii) Friends/peers (first-class family, friends and peers, family and acquaintances, and classmates); (iv) Experts/nutritionist (experts and specialists present in private clinics, general education of experts and nutritionists, sports clubs, and specialists in hospitals and clinics); (v) Doctors/nurses (specialist physicians, general practitioners, and nurses in hospitals and clinics); (vi) Books (nutritional books, general books, and specialized books in the field of health); (vii) Newspapers/journal articles (food magazines, general magazines, brochures, and newspapers); (viii) Sport clubs (physical education instructors and professors, fintness instuctors, club coaches, other athletes, and educational catologs); (ix) University/school (professors and teachers, and health educators); (x) Grocery stores (food labels, catalogs, banners and advertising, stands, and amounts of sales); (xi) Radio programmes (cited health interviews, and radio advertisements); and finally (xii) Food, supplement and medicine factories (exhibitions and conferences). It took approximately 15 minutes to finish all questions. Only the Persian versions of this questionnaire was available. Table 1 presents Online Questionnaire Design (demographic and nutritional information sources).

The data were analyzed using the SPSS statistical software (version 23, SPSS, Chicago, IL, USA). Descriptive statistics were utilized for each item of the sources of nutritional information including frequency and percentage. Demographic data including age, sex, and educational level were analyzed using descriptive statistics. The relationship between different sources of nutritional information with demographic variables such as gender, age, and level of education was assessed using Chi-Square test ($\chi 2$) and $p<0.05$ was considered as the significance level.

Results

Totally, 38.3% of the participants in the study were male. Three participants withdrew from the study. Baseline demographic and laboratory parameters and also nutritional intake of the study participants were shown in Table 2.

Table 1: Online Questionnaire Design (demographic and nutritional information sources)

Part	Area of question	Response
Demographics	Gender	Dichotomous
	Age	MCQ
	Educational level	MCQ
Preferred sources of nutritional information	Most used sources of nutritional information	1-12 ranking
Sources of effectiveness of nutritional information	The source of effectiveness of nutritional information in modifiing nutritional behavior	MCQ*

MCQ: Multiple choice question. *Not effective/ineffective/moderately effective/very effective.

Table 2: Baseline demographic characteristics in participants*.

Variable	Demographic features	Frequency (percent) (n=235)
Gender	Males (n)	90 (38.3)
	Females (n)	145 (61.7)
Age	18-30 (y)	87 (37.02)
	30-40 (y)	112 (47.66)
	40-55 (y)	36 (15.31)
Education	High school (n)	0 (0)
	Associate Degree (n)	21 (8.9)
	Bachelor (n)	75 (31.9)
	MA (n)	139 (59.2)

*Data have been shown as Frequency (percentage). Abbreviations: MA, master's degree.

The sources of nutritional information and the extent of resource utilization by participants showed that social media were mostly used for pursuing nutritional information by the study participants (87%). Television was the second source, with 70% of participants continuously looking for nutritional information. Food factories were the least frequently used source of nutritional information (40%, Figure 1). The most effective source of nutritional information among the participants was Instagram (41%), and the least frequently used source was sales intermediaries (15%) (Table 3).

No statistically significant differences were found between both sexes in terms of using multiple resources (p=1). Social media wer the most effective source of nutritional information in the age range of 45-55 years. In the age range of 30-40 years, doctors and nurses were introduced as a sources of nutritional information (p<0.001). Among people with a college degree, social media were the most important sources of nutritional information (p<0.001, Table 4).

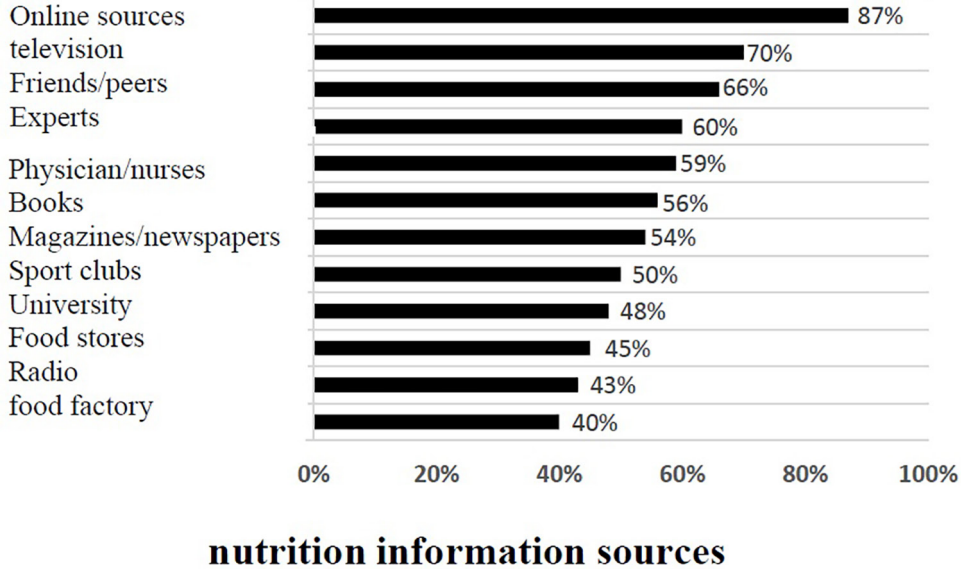

Figure 1: Preferences for sources of nutritional information*. Order of priority of food information sources was investigated. *Data have been shown as frequency (percentage). *Continuous data with normal distribution were expressed as n (%).

Table 3: Effective use of sources of nutritional information from the perspective of study participants*.

Sources	N	Ingrents	N (%)
Social media	205	Instagram	84 (41)
		Other social media sources	121 (49)
Television	166	Wellness programs	87 (52)
		Other television programs	79 (48)
Friends and peers	158	First-class family	72 (45.6)
		Other sources	86 (54.6)
Nutritionists and experts	142	Experts present in private clinics	46 (32.4)
		Other experts	96 (67.6)
Doctors and nurses	139	Specialist physicians	90 (65)
		Other specialist	49 (35)
Magazines and newspapers	127	Food magazines	54 (42.5)
		Other magazines	30 (22.6)
University and schools	115	Professors and teachers	54 (47)
		Health educators	31 (27)
Sports clubs	118	Physical education instructors and professors	30 (26)
		Other sources	43 (44.9)
Grocery stores	108	Food labels	48 (44)
		Other stores	60 (56)
Radio	103	Cited health interviews	90 (87)
		Radio advertisements	13 (13)
Food, supplement	95	exhibitions and conferences	67 (71)
		Other advertising sources	14 (15)
Book	56	Nutritional books	26 (46.2)
		Other books	30 (53.8)

*Continuous data with normal distribution we+re expressed as n (%).

Table 4: Association between demographic variables and sources of nutritional information.

Sources	SM	TP	E	D/N	B	N/J	U	SC	FS	RP	FF	F/P	$\chi 2$	*p* value*
Gender													0.316	1
Males	12	9	8	8	8	7	7	7	5	5	5	9		
Females	19	15	13	14	12	11	10	10	9	9	9	14		
Age (Years)													418.9	<0.001
18-30	0	0	0	0	0	0	5	17	14	14	14	23		
30-40	0	19	21	22	20	18	12	0	0	0	0	0		
40-55	31	5	0	0	0	0	0	0	0	0	0	0		
Education														
Primary	0	0	0	0	0	0	0	0	0	14	0	7	388.33	<0.001
High school diploma	0	0	0	0	0	0	14	17	14	0	14	16		
University	31	24	21	22	20	18	3	0	0	0	0	0		

*[2]Qualitative variables were assessed by Chi-Square; Abbreviations: SM: Social media; TP: Television Programs; F/P: Friends/peers; E: Experts; D/N: Doctors/nurses; B: Books; N/J: Newspapers/Journal articles; SC: Sport clubs; U/S: University/Scool; FS: Food stores; RP: Radio programmes; FF: Food factory.

Discussion

To the best of our knowledge, this study is the first to the use of twele different sources of nutritional information among participants in Iran. Our data indicated that social media was the most used popular source to obtain nutritional information among the study participants. Social media might have been the most common source of information due to the augmented improvements of telecommunication technologies. Pepole have more access to the Internet than previous years when telecommunication substructure was not advanced in Ghana (25). Another study conducted in 2013 in Brazil showed that television had the biggest share of food choices. Also, the effects of social media and family were in the fourth and fifth grades, respectively (13).

The internet is an important source for getting

information, with the ability to gather data quickly (18). The second source of food nutritional information was television.

The largest source of media messages about nutrition to Brazilian is Digital television (13, 29). Also, the effects of social media and family were in the fourth and fifth grades, respectively (13). TV programs have a significant power on people's behavior (30), so it is important in selecting appropriate programs on nutritional information in Iranian population, its determinants and its association with food consumption. The strength point of this research was investigateing nutritional information in Iranian population for the first time. Sources of nutritional information were randomly selected by experts (31). However, our data indicated that the majority of educated people chose the social media as the most effective sources of nutritional information.

Although educated people use primary health care, physicians are not the first source of nutritional information, which indicates that they can follow the information, because they have better tools to do so (13). Social media are of the highest quality compared to other options. On the other hand, Percheski's (19) study showed that social media may be used as a complementary source of nutritional information. The sources of nutritional information were different in various age groups. Several factors (age, economical status, level of education, and even illness) affect the utilization and preference of nutrition information sources (20, 21). Healthcare providers are considered the most reliable source of nutrition information (18, 26). High nutritionist charges may prevent people from visiting them in developing countries (32), so people's preference for nutritional information is related to socioeconomical status (33).

The current study had some limitations. All factors affecting nutritional information were not assessed. We also suggest assessing data on the exact time and quality of nutritional information obtained with the same gender distribution in future studies. Despite the limitations, this study had a large population and was the first study in this field in Shiraz, Iran that could provide valuable information. The present study provided effective strategies for the transmission of information by health professionals to individuals in the community to promote health.

Conclusion

This study has shown that social media are the most effective source of nutritional information. However, there was a significant difference in the choice of nutritional information source in terms of age and level of education.

Acknowledgement

The authors would like to thank Shiraz University of Medical Sciences, Shiraz, Iran and also Center for Development of Clinical Research of Nemazee Hospital and Dr. Nasrin Shokrpour for editorial assistance. This study was financially supported by the Research Vice Chancellor of Shiraz University of Medical Sciences (Grant No. 22605).

Conflict of Interest

None declared.

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