KAP STUDY

Population preferences for sources that offers information about dietary fibres health effects - an international cross-sectional survey

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Abstract

Objective: To investigate the perceived importance of information about dietary fibre with regard to population socio-demographic characteristics and consumption patterns.

Methods: The cross-sectional study was conducted from September to November, 2016, in six different counties and 57 cities across Romania, and was part of a larger project that had nine other countries as well. Data of the Romanian subjects was collected using a validated questionnaire that was disseminated across the 10 countries at the same time. Knowledge about dietary fibre was explored through 10 questions, and the respondents were asked to answer on a 5-point Likert scale varying from 1 (totally disagree) to 5 (totally agree). SPSS 22 was used for data anaylsis.

Results: Of the 670 subjects, 358 (53.4%) were females, and the overall mean age was 35.81±15.61 years (range: 18-89 years). There were 298 (44.5%) subjects with a university degree, 314(46.9%) had completed high school and 57 (8.5%) had done primary school. Besides, 568 (84.8%) participants lived in an urban environment. Internet was the main source of getting information for 368(54.9%) subjects, while the lowest was hospitals 122 (18.2%). The percentage of correct answers regarding knowledge about health effects of dietary fibre was 23.12%. Most accurate answers were related to deficiency of vitamins and minerals 370 (55.5%), breast cancer 202(30.3%), vision problems 202(30.3%) and diabetes 168 (25.2%). The question with least accurate answer was the one about general preventive characteristics of dietary fibres 65 (9.7%).

Conclusions: A proper and friendly way to transmit information about the importance of dietary fibre consumption is critical in promoting healthy diet patterns and in preventing non-transmissible diseases.

Keywords: Dietary fibre, Sources of information, Chronic disease, Internet, Television.
(JPMA 69: 985; 2019)

Introduction

For dietary fibre (DF), several standards have been developed depending on country, region or authority. According to the European Food Safety Authority (EFSA), the average fibre intake of 25g per day is adequate for adults.[1] The Nordic Councils of Ministers recommends that DF intake should be at least 25-35g/day, or approximately 3g/MJ.[2] In Romania, an intake of 25-30g fibre per day is recommended as part of a healthy diet.[3] Against these recommended values, average intake for adult males in Europe has been 18-24 g/day and for females 16-20 g/day.[4]

Chronic diseases, such as cardiovascular disease (CVD), diabetes mellitus (DM) and cancer, are major causes of morbidity and mortality worldwide. In 2013, in Romania, CVD accounted for 59.5% of all deaths; the highest in Europe.[5] The age- and gender-adjusted prevalence of DM is 11.6%.[6] Breast cancer is the most common cancer in women. Large bowel cancer is the second most common cancer in men and third in women and the third most common cause of cancer death in Romania after lung and breast cancer.[7]

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The current study was planned to investigate the perceived importance of information about DF from various sources with regard to socio-demographic characteristics of the population, and the interest and level of knowledge about health effects of DF consumption.

Subjects and Methods

The cross-sectional study was conducted from September to November, 2016, in six different counties and 57 cities across Romania, and was part of a larger project that had nine other European countries as well. The timeframe coincided with the season when fruit and vegetable consumption is on the national average compared to the year-long consumption pattern. The study was approved by the ethics committee of the Centro de Estudos em Educação, Tecnologias e Saúde (CI&DETS) Research Centre, Portugal, under whose umbrella the multi-nation study was conducted. Other than Romania, the countries were, in alphabetical order were Argentina, Croatia, Egypt, Hungary, Italy, Latvia, Macedonia, Portugal, and Turkey.

The sample for the current study in Romania was raised using convenient sampling technique, and data was collected using a validated questionnaire which was disseminated online.[8,9] The questionnaire was designed to access the socio-demographic characteristics of participants, such as age, gender, level of education, their preferences on information sources about DF intake, and the correctness about DF knowledge. Sources of information were evaluated with a 6-point Likert scale. The respondents were asked to classify the different options on a scale from 1 (least important) to 6 (most important), about the questions: "From where do you usually find information about dietary fibre?". The answering options were: health centres/hospitals, radio, television, school, magazines/books, and internet.

For further analysis, options 5 and 6 were classified as important, while the rest were re-coded as not-so-important.

Knowledge of DF effects was measured through 10 questions that needed answers on a 5-point Likert scale varying from 1 (totally disagree) to 5 (totally agree) to indicate their extent of agreement regarding the following statements: "Eating dietary fibres in appropriate amounts can prevent and/or treat diseases", "Fibres can prevent and/or treat cancer", or the same about cardiovascular diseases, obesity, constipation, diabetes, and deficiency of vitamins and minerals. Eight questions were correct with 'agree' options and two questions were considered correct if participants had chosen the 'disagree' option. Participants choosing the 'neither agree nor disagree' option were considered undecided, and their answers were counted separately. For each participant, the proportion of correct, incorrect and undecided answers were calculated, and further analysed. For this purpose, a new variable was created, classifying the participants in two categories: those with 50% or more of correct answers regarding DF knowledge, and those with less than 50% correct answers.

Data was analysed using SPSS 22. The level of significance considered was 5%, except in situations where Bonferroni correction was applied and the level of significance was set at 0.016. For comparisons of ordinal variables, Mann-Whitney and Kruskal-Wallis tests were applied. Chi-squared tests were used in tables with nominal/ordinal variables. Direct logistic regression was applied for testing relations between individual sources of information considered important and the knowledge level greater than or equal to 50%.

Results

Of the 6010 subjects in the larger project, there were 847(14%) in Argentina, 2530(42%) in Croatia, 281(4.6%) in Egypt, 296(5%) in Hungary, 312(5.2%) in Italy, 180(3%) in Latvia, 312(5.2%) in Macedonia, 382(6.3%) in Portugal, 200(3.3%) in Turkey and 670(11.2%) in Romania. Of the 670 subjects in the current study, 358(53.4%) were females, and the overall mean age was 35.81±15.61 years (range: 18-89 years). There were 298(44.5%) subjects with a university degree, 314(46.9%) had completed high school and 57(8.5%) had done primary school. Besides, 568(84.8%) participants lived in an urban environment.

The most frequent knowledge source was internet 368 (54.9%), followed by television 258 (38.5%), magazines 252 (37.6%) and radio 204 (30.4%) (Table 1).

The proportion of correct answers for the sample was 23.12% (range: 0-80%). Most accurate answers were related to deficiency of vitamins and minerals 370 (55.5%), breast cancer 202 (30.3%), vision problems 202(30.3%) and DM 168 (25.2%). The question with least accurate answer was the one about general preventive characteristics of DF 65 (9.7%) (Table 2).

Table-1: Socio-demographic characteristics by sources of information considered important.

Variables		Hospitals n(%)		Radio n(%)		Television n(%)		School n(%)		Magazines n(%)	n(%)	Internet n(%)	
Age groups	18-29 years	66(20.7)	0.080	53(16.6)	<0.001	108(33.9)	0.011	61(19.1)	0.032	122(38.2)	0.946	207(64.9)	<0.001
	30-59 years	39(18.7)		75(35.9)		81(38.8)		55(26.3)		77(36.8)		111(53.1)	
	over 60 years	17(12.0)		76(53.5)		69(48.6)		22(15.5)		53(37.3)		50(35.2)	
Education	less than HS	22(38.6)	<0.001	24(42.1)	<0.001	14(24.6)	0.001	14(24.6)	<0.001	26(45.6)	<0.001	20(35.1)	<0.001
	High school diploma	39(12.4)		123(39.2)		175(55.7)		45(14.3)		67(21.3)		142(45.2)	
	At least University degree	61(20.5)		57(19.1)		69(23.2)		79(26.5)		159(53.4)		205(68.8)	
Gender	Female	82(22.9)	0.001 OR = 2.02	93(26.0)	0.007 OR = 0.635	84(23.5)	<0.001 OR = 0.243	93(26.0)	<0.001 OR = 2.082	159(44.4)	<0.001 OR = 1.366	233(65.1)	<0.001 OR = 2.444
	Male	40(12.8)		111(35.6)		174(55.8)		4514.4)		93(29.8)		135(43.3)	
Living environment	Rural	31(30.4)	0.001 OR = 2.28	17(16.7)	0.001 OR = 0.407	20(19.6)	<0.001 OR = 0.338	33(32.4)	0.001 OR = 2.109	61(59.8)	<0.001 OR = 2.937	64(62.7)	0.085 OR =1.463
	Urban	91(16.0)		187(32.9)		238(41.9)		105(18.5)		191(33.6)		304(53.5)	

Table-2: Knowledge profile of the sample.

Questions: Fibre can prevent / treat	Frequency of answers from participants by type Right n(%)	Undecided n(%)	Wrong n(%)
Chronic diseases in general	65 (9.7)	51 (7.6)	551 (82.6)
CVD	143 (21.4)	128 (19.2)	396 (59.4)
High cholesterol	106 (15.9)	91 (13.6)	470 (70.5)
Bowel cancer	104 (15.6)	77 (11.5)	486 (72.9)
Obesity	125 (18.7)	77 (11.5)	465 (69.7)
Breast cancer	202 (30.3)	231 (34.6)	234 (35.1)
Constipation	108 (16.2)	100 (15.0)	459 (68.8)
Vision problems	202 (30.3)	198 (29.7)	267 (40.0)
Deficiencies of vitamins / minerals	370 (55.5)	129 (19.3)	168 (25.2)
Diabetes	168 (25.2)	131 (19.6)	368 (55.2)
TOTAL	664 (23.12)	664 (21.49)	664 (23.32)

Higher knowledge was a predictor for television as an important information source on DF's health effects (odds ratio [OR]: 31.94; 95% confidence interval [CI]: 14.238 - 71.650).

For participants choosing internet as an important source, the knowledge level was not significantly different from those not depending on the (Table 3).

Discussion

To our knowledge, factors associated with consumption of DF have never been investigated in Romanian population.

Using the same questionnaire, Guine at al., showed that regarding the general knowledge about fibres importance for health Romania had the lowest score, after Macedonia, Turkey and Latvia.[8,9] Szucs et al. found in Hungarians profound knowledge on DF health effects, with participants reporting using internet as a trusted information source.[10] Unlike other studies that were investigating health information-seeking behaviours, which found health professionals, pharmacists and the internet as the most used and trusted sources,[11] in our study, obtaining DF knowledge from health professionals and hospitals and schools was not considered important by most participants. Also, participants who considered internet as the most important source did not have higher knowledge content when compared to those who did not consider it as important. Characteristics of the website, such as design, layout and interactive features, have a positive effect on trust or credibility, whereas advertising has a negative effect.[12] Others have considered the internet communications channel YouTube as containing misleading information and primarily anecdotal, which contradicts the reference standards. The probability of a lay user finding such content is relatively high, but trustworthy and high-quality information can be accessed with the right search terms.[13] Although internet is valuable for those with limited access to health information, individuals vary in approach and search patterns by socio-economic status.[14]

In the current study, the profile of internet users included females, young age, middle-level education, and rural environment. Similar profile was presented in an Italian sample.[15]

A study in Germany found that due to social reasons and entertainment, women were more engaged in using the internet as information source compared to men.[16]

In our sample, those considering hospitals and schools as important information sources represented 83.7% of the population. Sbaffi et al have also discussed that for seeking health information, older individuals relay mostly on interpersonal relations with physicians, pharmacists, friends, and family compared to web-based information.[12]

A meta-analysis that investigated the effects of

Table-3: Unadjusted and adjusted odds ratio (OR) for the relation between and knowledge level on dietary fibre (DF) health effects and the probability of considering sources of information as important when controlling for socio-demographic characteristic of the study population.

Sources of information considered important	Variables		Unadjusted OR	95% C.I. for OR OR	Model OR OR	95% C.I. for OR OR
Hospital	Knowledge level on DF	GE 50% correct answers	0.163	0.059 - 0.451	0.163	0.055 - 0.478
	Age	18-29 years	1 reference		1 reference	
		30-59 years	1.137	.732 - 1.767	1.301	0.803 - 2.109
		Over 60 years	1.918	1.080 -3.407	4.563	2.120 - 9.822
	Education	Primary school	0.409	0.224 - 0.748	0.199	0.091 - 0.436
		Secondary school	1.815	1.171- 2.812	1.092	0.683 - 1.744
		University degree	1 reference		1 reference	
	Gender	Female	2.020	1.336 - 3.055	1.397	0.884 - 2.210
	Living environment	Urban	0.437	0.271 - 0.705	0.599	0.360 - 0.997
School	Knowledge level on DF	GE 50% correct answers	0.102	0.032 - 0.326	0.146	0.044 - 0.488
	Age	18-29 years	1 reference		1 reference	
		30-59 years	0.662	0.437 -1.003	0.709	0.451 - 1.114
		Over 60 years	1.290	0.757 -2.198	1.431	0.765 - 2.674
	Education	Primary school	1.108	0.575 -2.134	0.963	0.447 - 2.074
		Secondary school	2.156	1.435 - 3.240	1.397	0.901 - 2.168
		University degree	1 reference		1 reference	
	Gender	Female	2.082	1.404 - 3.089	1.715	1.112 - 2.646
	Living environment	Urban	0.474	0.298 - 0.756	0.549	0.335 - 0.901
Radio	Knowledge level on DF	GE 50% correct answers	0.038	0.009 - 0.158	0.029	0.007 - 0.122
	Age	18-29 years	1 reference		1 reference	
		30-59 years	0.356	0.237 - 0.536	0.521	0.324 - 0.838
		Over 60 years	0.173	0.111 - 0.269	0.335	0.196 - 0.574
	Education	Primary school	0.325	0.179 -0.592	0.315	0.154 - 0.645
		Secondary school	0.367	0.254 -0.530	0.258	0.170 - 0.394
		University degree	1 reference		1 reference	
	Gender	Female	0.635	0.456 - 0.885	1.030	0.675 - 1.573
	Living environment	Urban	2.454	1.417 -4.251	4.081	2.157 - 7.721
Television	Knowledge level on DF	GE 50% correct answers	20.828	10.570 - 41.044	31.940	14.238 - 71.650
	Age	18-29 years	1 reference	1 reference		
		30-59 years	0.809	0.563 - 1.162	0.425	0.258 - 0.702
		Over 60 years	0.542	0.362-0.810	0.272	0.152 - 0.485
	Education	Primary school	0.925	0.478 - 1.791	1.328	0.601 - 2.932
		Secondary school	0.239	0.169 - 0.339	0.557	0.364 - 0.852
		University degree	1 reference		1 reference	
	Gender	Female	0.243	0.175 -0.339	0.362	0.241 - 0.545
	Living environment	Urban	2.957	1.764 -4.956	2.101	1.139 - 3.875
Magazines	Knowledge level on DF	GE 50% correct answers	0.027	0.007 - 0.110	0.037	0.009 - 0.158
	Age	18-29 years	1 reference		1 reference	
		30-59 years	1.062	0.740 - 1.522	1.435	0.946 - 2.177
		Over 60 years	1.040	0.691 - 1.564	1.122	0.674 - 1.868
	Education	Primary school	1.364	0.772 - 2.409	2.017	1.024 - 3.972
		Secondary school	4.217	2.962 - 6.003	3.013	2.036 - 4.457
		University degree	1 reference		1 reference	
	Gender	Female	1.882	1.366 - 2.591	1.186	0.812 - 1.734
	Living environment	Urban	0.341	0.221 - 0.525	0.370	0.228 - 0.601
Internet	Knowledge level on DF	GE 50% correct answers	1.320	0.859 - 2.027	0.795	0.473 - 1.336
	Age	18-29 years	1 reference		1 reference	
		30-59 years	1.632	1.143 - 2.329	1.513	1.007 - 2.274
		Over 60 years	3.401	2.248 - 5.145	2.261	1.377 - 3.710
	Education	Primary school	4.078	2.246 -7.405	3.290	1.661 - 6.517
		Secondary school	2.670	1.918 - 3.717	2.027	1.405 - 2.924
		University degree	1 reference		1 reference	
	Gender	Female	2.444	1.789 - 3.339	1.783	1.258 - 2.525
	Living environment	Urban	0.684	0.443 - 1.055	.606	0.370 - 0.992

entertainment education on health communication found a small significant effect on health outcomes, measured by knowledge, attitudes, intention, and behaviours, with exposure time as a significant moderator.[17] The effect of entertainment education, expressed as health information recall varies with respect to educational content integrated in the narrative content.[18] In our sample, older participants relied mostly on radio and television as an important information source. Using radio and magazines as important sources had a negative impact on knowledge quality. In our sample, television was considered an important source of information by less than 40% respondents, but the quality of their knowledge was the highest.

The profile of individuals considering television as an important information source were urban males of higher age with middle school education. Reliability on television programmes for healthcare information is associated with good health-related lifestyle.[19] Health-care providers and television have laos been cited as effective tools for health education.[20]

Individuals with higher diet knowledge index score, had increased intake of dietary fibre.[21] In a recent review, higher nutrition knowledge was positively but weakly associated with higher intake of fruits and vegetables.[22] A study showed that the average share of animal-source calories have increased from 530 kcal in the early 2000 to over 600 kcal lately, indicating that fruit and vegetable consumption has decreased per capita.[23]

There are several interrelated barriers why DF consumption is much lower than recommended. These include lack of knowledge on health benefits of DF, little interest on media compared to other nutrients, and perceived high costs of fruits and vegetables.[24] Although the culture, climate and traditional diets in Asia are different from Europe, there is a shift in eating and disease patterns towards diet-related non-communicable diseases, and this shift is accompanied by changes in behaviour, lifestyle, food sources and physical inactivity. Several studies have showed a rising of prevalence of diabetes and obesity in the general population and there is a need to highlight the importance of education, proper information and efficient interventions to be made in order to reduce this public health burden.[25-27]

Conclusion

Creating awareness regarding the benefits of DF consumption is critical to promoting healthy diet patterns. Health professionals, mass media, including the internet, are key sources of information for the public at large.

Disclaimer: None.
Conflict of Interest: None.
Source of Funding: None.

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