Website: http: jebhpme.ssu.ac.ir
EBHPME 2019; 3(4): 284-92 pISSN: 2538-5070

EBHPME

ORIGINAL ARTICLE

Evidence Based Health Policy, Management & Economics
Health Policy Research Center, Shahid Sadoughi University of Medical Sciences

Assessment of the ways of Fars Province's residents being informed of holding up the Health Week and its effect on their knowledge about Type 2 Diabetes

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ARTICLEINFO

Article History:
Received: 2 Jul 2019
Revised: 9 Oct 2019
Accepted: 19 Dec 2019

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ABSTRACT

Background: Diabetes is currently one of the most prominent causes of mortality and among the intensifying concerns of public health in the world. Education and enhancement of people's knowledge about this disease can play an effective role in diabetes prevention and control. The present study was aimed at assessment of the effects of the Health week's programs about diabetes on the citizens of Fars Province.

Methods: In this descriptive-analytical research, carried out interventionally, 501 people participated in the study both before and after the Health week. To define the sample's volume, we used multi-stage cluster sampling. The study was conducted by using a made questionnaire which consisted of two parts, one part for demographic information and the other part for information about the people's knowledge level of the Health Week and diabetes. The obtained data was analyzed by using descriptive statistics and Mc Nemar test, Paired t test, and independent sample t test in $SPSS_{19}$.

Results: The results indicated that holding up the Health Week had significant effect on enhancement of the participants' knowledge about the disease and the ways of its diagnosis as well as the prevention methods (P-value < .001). In addition, there was a significant change in the frequency of health informational resources in mass media such as TV, radio, social media and internet, pamphlets and poster (P-value < .001), while no significant difference was observed through billboards, Healthcare centers' staff, etc. before and after the week.

Conclusion: Informing people about the Health week and its programs through mass media can play an effective role in enhancement of people's health knowledge and lead to prevention of the disease and proper behavior to fight it.

Keywords: Assessment, Health, Awareness, Type 2 Diabetes

Citation

This paper should be cited as: Azadian F, Moradian MJ, Hemmati A, Karimi MR, Karami H, Shirvani Shiri M. **Assessment of the ways of Fars Province's residents being informed of holding up the Health Week and its effect on their knowledge about Type 2 Diabetes.** Evidence Based Health Policy, Management & Economics. 2019; 3(4): 284-92.

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[DOI: 10.18502/jebhpme.v3i4.2070]

Introduction

Type 2 diabetes is one of the most widespread metabolic disorders throughout the world and among the intensifying concerns of public health in the world (1,2). According to the report of International Federation of Diabetes, the number of patients with diabetes was 425 million persons in 2017 that will reach to 629 million patients in 2045 based on the estimates. There are 5 million diabetic patients in Iran and the estimated number of the patients in Iran for 2045 is about 10 million patients (3). Most of the patients with diabetes live in the countries with low and moderate incomes. These countries will experience the highest incidence of diabetes in the future, according to the estimates. Middle eastern and the North African countries have the highest incidence of diabetes (10 % and 9 %, respectively) in the world and it is estimated that about 35 million patients with diabetes live in these regions (4). Among these countries, Iran has the highest incidence of diabetes which is 9.94 % of adult population (4).

In addition to high incidence of diabetes throughout the world, the people with diabetes are subjected to its severe and fatal side effects. Cardiovascular diseases, seizure, retina damage and blindness, environmental neuropathy, kidney deficiency, and amputation of dextral limbs are the most severe side effects of diabetes (5-7). In respect of mortality, diabetes is the fifth cause of mortality in the western societies and the fourth common cause of visit to physician (8). 2.63 % of total mortality of the world and 3.91 percent of total mortality of Iran are associated with type 2 diabetes (9). Thus all of these issues cause a great deal of economic- social problems and increase the costs of the society so that the direct costs of diabetes consist of 5.2 to 15 % of the total health budget and its indirect costs are several times more (10). In 2009, the total annual costs of diabetes in Iran were estimated as 3.64 billion US$ and predicted that it would amount to 9 billion US$ in 2030 (4.2 billion US$ as direct costs and 4.8 billion US$ as indirect costs) (11).

By new definitions of diabetes, the disease is not diagnosed or remains latent in many of the patients and is not consequently treated, thus expose them to its side effects which may impose huge costs on the public health (12- 14). The number of patients with diabetes was estimated as 3.78 million people in 2009 of which the diseases of 1.04 million people were not diagnosed and it was estimated that the number of the patients without diabetes diagnosis would reach 2.5 million people in 2030 and this issue is the result of insufficient knowledge of people about the latent diabetes' hazardous factors (11). Hence, regarding the recent emphasis of World Health Organization on control of non-communicable diseases, It is required that an appropriate model for early prevention of these diseases including diabetes, cardiovascular diseases, seizure, and high blood pressure is designed and implemented so that it allows to aware people of the early prevention and teach them the importance of the problem and the way of dealing with it (15). It is evident that one of the effective factors of prevention and control of diabetes disease is sufficient knowledge about the diseases, the factors effective on its incidence and the way of its prevention. Lack of knowledge and awareness about the disease may be the first reason for weak care giving. Proper informing of the patient with diabetes and acceptance of disease by the patient, are the two main conditions for possible enhancement of awareness, vision and reaction to the disease which may prevent its undesired effects (16). Not respecting healthy behavior may be seen in any society and is considered a part of its culture. Thus, people should have sufficient knowledge about proper living ways to protect their own health and guarantee the health of their affiliates and themselves through doing a series of simple activities and with the least cost.

Every year, 7th April is inaugurated as the World Health Day all over the world. In Iran, 21st to 27th April is called the National Health Week. In the week, one of the major health issues of Iran is selected as the slogan of the week in order to carry out various activities within the week around the selected slogan. The Health Week in 2016 held on

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[DOI: 10.18502/jebhpme.v3i4.2070]

with the subject of "overcoming diabetes" by conducting suitable program. In the meanwhile, health deputies of universities spend great amounts to supply and provide various media such as poster, pamphlet, radio and TV and even costly exhibitions, to teach people proper behavior. Regarding the high spending, no information about the type of media or notice that attracts people has not been obtained yet, based on which more audience is covered by the desired media and the best services in respect of the subjects are provided with the least cost. Hence, this research was carried out to assess the ways of informing Fars Province citizens of the Health Week inauguration and the effects of the week's programs on their awareness about diabetes.

Materials and Methods

The present study was descriptive-analytical and was carried out as cross-sectional in 2016. The study community consisted of all people of age older than 18 year living in Fars Province's cities (except Jahrom, Fasa, Laar and Garaash). The sample volume required was determined as 384 persons, regarding 95 % assurance level and relative error of 10 % and the ratio of 50 % to obtain the required minimum sample volume by using the following sample volume formula,

$$n = \left[\frac{z^2 p(1-p)}{d^2} \right]$$

n: sample volume

Z^2: table value of Xi square for freedom degree of 1 with desirable confidence interval (3.8416)

P: population ratio (0.5)

d^2: margin of error (0.1)

Considering the subgroup analysis as well as the sampling method the value was multiplied by 1.5 as the longitudinal effect and the loss percentage was considered as 10 % and finally 634 people were chosen. To choose the samples, we used multistage cluster sampling strategy. First, some parts of the city were chosen as clustering (considering geographical orientations and city center) and then the regions were randomly selected.

About 30 % of the cities subordinate to Shiraz University of Medical Science were chosen by simple random method. Of note, Jahrom, Fasa. Laar, Garaash had independent university or faculty of medical science, hence they were not included in the study. Regarding that 30 cities are covered by Shiraz University of Medical Science, 9 cities were selected by simple random method and the proportion of each city/region was defined. Considering the required clusters, the similar number of postal codes were selected in each city. One week before the Health Week, the sampling and interview was conducted by visiting the post code and confronting with the first qualified person and counting five households to the right side of this one (the second household was No. 6). Then, one week after the Health Week, we returned to the same households and asked the same questions. At this stage 21% of the sample volume was lost and the final total number of participants both before and after the week was 501 persons. The tool of data gathering was a made questionnaire consisting of two parts: part one contained demographic information such as age, gender, education, and occupation. The second part consisted of eight questions about awareness of the time of the Health Week, its slogan, the sources of obtaining its information, knowledge about diabetes, method of its diagnosis and treatment, its symptoms and the ways of prevention. Validity of the questionnaire was assessed through the content validity and by the review of literature and consulting with the professionals and, after removing some ambiguities, the final version was designed and used. General reliability of the study tool was verified by cronbach's alpha equal to 0.84. Finally, after data collection, data were entered into $SPSS_{19}$ for analysis. To compare the awareness points of Fars Province citizens before and after the event, we used paired t test and carried out independent sample t test to assess the effect of demographic information on the awareness of the citizens. We also used McNemar statistical test to compare the frequency percent before and after the week. This study was verified in Ethics Committee of Shiraz University of Medical Science by code number of

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[DOI: 10.18502/jebhpme.v3i4.2070]

IR.SUMS.Rec.1395.51073. All participants signed the informed consent form of participation.

Results

The total number of participants both before and after the week was 501 persons. Of the total participants, 134 persons (26.7 %) were male and 367 persons (3.3 %) were female. The mean age of the participants was 48.7 years with SD of 8.7 years. 106 persons (21 %) had primary education, 230 persons (46 %) had diploma and 165 persons (33 %) had academic education. Occupation frequency distribution of the participants was presented in Table 1.

To assess being informed of the time of the Health Week in the 501 people group interviewed both before and after the event, two groups were compared. To compare the frequency percent before and after the week, we used McNemar statistical test, and the results were summarized in Table 2 as the possible value. According to the results provided in Table 2, the difference between before and after the week was statistically significant. In other words, the Health Week affected the awareness about the time of the Health Week inauguration.

Frequency distribution of awareness of people about the week's slogan were presented in table 2. As shown by the results of McNemar test, there was a significant difference between the awareness level of people about the week's slogan "Overcoming diabetes" before and after the Health Week.

The results of the test indicated that there was statistically significant difference before and after the Health Week inauguration in the frequency of health information sources in media such as TV (P-value < 0.005), radio (P-value < 0.001), social media (P-value < 0.001), internet (P-value < 0.001), friends (P-value < 0.001), pamphlet and poster (P-value < 0.001), in other words the above sources, in particular TV and radio, had the greatest influence on enhancement of awareness and knowledge of the people. While in the sources such as billboard (P-value < 0.999), health centers staff (P-value < 0.089), and others (P-value < 0.497), the difference was not significant before and after the week.

The comparison of patients' awareness level of the disease and diagnostic methods for diabetes before and after the Health Week was presented in Table 4. According to the results obtained from McNemar test on knowing the causes of diabetes such as high blood sugar, high blood pressure, self-immunity disease, no statistically significant change was observed in the people's awareness level (P-value < 0.005). However, there was significant variation in knowing diabetes diagnostic methods like blood sugar test, symptoms, examination and urine test. In the assessment of the awareness level about the disease's diagnostic methods, variations of the participant's awareness level were significant in all of the items mentioned in the table.

The awareness levels of the participants about treatability, lack of symptoms and prevention of diabetes before and after the Health Week were indicated in Table 5. The results showed that the people's awareness levels were significantly increased in all cases.

Table 1. Frequency distribution of the participants' demographic characteristics

gender	Occupation	Number	Percent (%)
(n = 367)women	housewife	268	53.4
	employee	89	17.8
	No answer	10	2.1
(n = 134)men	employee	48	9.5
	Freelancer and jobless	70	14
	No answer	16	3.2

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Table 2. Being informed of the time of the Health week and awareness of people about the week's slogan

Variables		Yes	No	P
		Number (%)	Number (%)	
Knowing the time of Health Week inauguration	Before the week	(46.50) 233	(53.49) 268	P < 0.001
	After the week	(58.28) 292	(41.71) 209	
Knowing the week's slogan	Before the week	(32.13) 161	(67.86) 340	
	After the week	(58.08) 291	(41.9) 210	

Table 3. Frequency distribution of health data sources before and after the Health Week

Media	Time	Yes	No	P
		Number (%)	Number (%)	
TV	Before	(72.25) 362	(27.74) 139	P < 0.005
	Next	(74.45) 373	(25.54) 128	
Radio	Before	(18.96) 95	(81.03) 406	P < 0.001
	Next	(73.65) 369	(26.34) 132	
Social Media	Before	(27.94) 140	(72.05) 361	P < 0.001
	Next	(64.27) 322	(35.72) 179	
Internet	Before	(20.35) 102	(79.64) 399	P < 0.001
	Next	(39.52) 198	(60.47) 303	
Health Centers Staff	Before	(25.14) 126	(74.85) 375	P < 0.089
	Next	(28.74) 144	(71.25)357	
Friends	Before	(38.72) 194	(61.27) 307	P < 0.001
	Next	(31.13) 156	(68.86) 345	
Billboard	Before	(14.37) 72	(85.62) 429	P < 0.999
	Next	(14.37) 72	(85.62) 429	
Pamphlet And Poster	Before	(9.78) 49	(90.21) 452	P < 0.001
	Next	(16.56) 83	(83.43) 418	
Others	Before	(13.17) 66	(86.82) 435	P < 0.497
	Next	(11.37) 57	(88.62)444	

Table 4. Frequency distribution of knowledge about the cause and diagnosis method of diabetes before and after the Health week

Media		Time	Yes	No	P
Knowledge about diabetes cause	High blood sugar	Before	(97.40) 488	(2.59) 13	P < 0.832
		Next	(97.80) 490	(2.19) 11	
	High blood pressure	Before	(14.77) 74	(85.22) 427	P < 0.225
		Next	(17.76) 89	(82.23) 412	
	Auto-immune disease	Before	(4.99) 25	(95) 476	P < 0.286
		Next	(3.39) 17	(96.60) 484	
	High uric acid	Before	(20.35) 102	(79.64) 399	P < 0.001
		Next	(39.12) 196	(60.87) 305	
	Blood sugar test	Before	(83.43) 418	(16.56) 83	P < 0.001
		Next	(92.41) 463	(7.58) 38	
Knowledge about definite diagnosis method for diabetes	symptoms	Before	(6.38) 32	(93.61) 469	P < 0.003
		Next	(4.39) 22	(95.60) 479	
	examination	Before	(12.77) 64	(87.22) 437	P < 0.001
		Next	(1.59) 8	(98.40) 493	
	Urine test	Before	(23.95) 120	(76.01) 381	P < 0.001
		Next	(5)25	(95) 476	

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[DOI: 10.18502/jebhpme.v3i4.2070]

Table 5. Awareness level about treatment, symptoms and prevention of diabetes

title		Time	Number Yes (%)	Number No (%)	P
Cure	Treatability of diabetes	Before Next	(30.73) 154 (68.86) 345	(69.26) 347 (13.13) 156	P < 0.001
Initial Symptoms	N/A	Before Next	(40.71) 204 (78.64) 394	(59.28) 297 (21.35) 107	P < 0.001
Symptoms	High urination	Before Next	(32.33) 162 (78.64) 394	(67.66) 339 (21.35) 107	P < 0.001
	High eating	Before Next	(32.13) 161 (77.44) 388	(67.86) 340 (22.55) 113	P < 0.001
	High drinking	Before Next	(48.9) 245 (57.28) 287	(51.1) 256 (42.71) 214	P < 0.001
	Urine infection	Before Next	(6.18) 31 (36.72) 184	(93.81) 470 (63.27) 317	P < 0.001
Prevention Ways	exercise	Before Next	(6.58) 33 (55.08) 276	(93.41) 468 (44.91) 225	P < 0.001
	diet	Before Next	(76.04) 381 (89.82) 450	(23.95) 120 (10.17) 51	P < 0.001
	Proper weight	Before Next	(40.31) 202 (72.25) 362	(59.68) 299 (27.74) 139	P < 0.001

Discussion

Diabetes is one of the most common and the most important metabolic disease throughout the world and is one of the major causes of mortality in most countries (17). One of the efficient ways of prevention and control of diabetes is having enough knowledge about the disease itself, the factors effective on the disease development, and the prevention methods. In this study, we assess the ways that Fars Province's citizens being informed of the Health Week inauguration and the effect of the week on their awareness level about diabetes. As the results indicated the Health Week inauguration had significant effect on enhancement of the participant's awareness about the week's slogan, diabetes, its diagnostic methods and prevention methods. The only definite diagnosis method of diabetes is blood sugar test. Other ways such as showing symptoms, examination by physician and urine test may verify the possibility of the disease but it must verify by blood sugar test. According to the results, before the Health Week, the participants significantly chose the diagnostic methods such as showing symptoms, examination by physician and urine test as the diabetes diagnosis method. However, after the week, the participants' knowledge about the issue was enhanced and most of them chose blood sugar test as diabetes diagnosis way and chose significantly less the other methods. In the Health Week, there was significant variation in frequency of health data sources in mass media such as TV, radio, social media, internet, pamphlet and poster and friends. Consistent with this study, Penn et al. concluded that mass media, radio and newspaper have significant effect on public awareness enhancement about diabetes (18).

The results of our study suggested that media such as TV (74.45 %), radio (73.65 %) and social media (64.27 %) consisted the major information sources of the participants. Similar to our results, Rashidi et al. (19), also considered radio and TV as the most important information sources of the society and stated a weak role for physicians. Mazloumi et al. (20), in their study aiming at assessment of the factors associated with oral self-care, concluded that the information source of most students were TV (83 %), family (82 %), dentist

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[DOI: 10.18502/jebhpme.v3i4.2070]

(78 %) and newspapers, poster and radio had the least role. In a study in 2002, Wee et al. (21), indicated that people received most of their information about diabetes from their friends and families and internet and virtual media gave the least knowledge about it.

According to the findings of our study, after the Health Week, significant variation was not seen in the participants' awareness levels about the causes of diabetes. Before the week, most of the participants (97.40 %) knew about high blood sugar as the cause of the disease and the value reached to 97.80 % after the week. While Babaie et al. (22), reported that more than half of the participants had no knowledge about diabetes symptoms. The result of the study by Jackson et al. suggested that people's awareness levels about diabetes symptoms were low and oral conversation was the most important information source for diabetes and physicians had the least contribution (23).

Nowadays, investigations showed that most of the people refer to internet when they hear about or suffer from a disease to acquire more information, so that one out of every 3 persons uses internet to know her/his health problem. 72 % of internet users also claimed that they searched internet to receive health and medical services. Among available online sources, 77 % of patients used search engines, 76 % of them used hospitals' websites and 52 % of patients used health and medical websites to search and investigate. While 24 % asked from their families, friends and colleagues, 49 % referred to physicians and only 32 % used TV, 20 % the magazines and 18 % the newspapers to search (24).

The above statistics more explicitly stated the importance of online sources as patients' investigation resources. In addition to the role of digital contexts in treatment, efficiency of their role in notification and awareness about self-care principles in prevention from diseases, notify the importance of appropriate attention to digital products in the field of health-care, such that, according to the statistics, 65 to 85 % of cares leading to the people's health were the results of these self-cares. Based on the study in 2016, 73.1 % of participants evaluated the role of electronic education in development of health information as efficient and 12.3 % as very efficient and these values indicated by itself the comprehensive influence of digital contexts in enhancement of people's health awareness and knowledge. It was determined that the most efficient medium is the online medium so that the role of internet is prominent among other media with 37.7 %, while 15.4 % of participants considered physicians and experts as effective (24). The limitations of this study include not cooperating for completion of the questionnaire and we needed larger sample from more cities to make the study more generalizable but it was not realized because of the great span of Fars Province and long distances between cities.

Conclusion

According to the results, it seemed that the Health Week inauguration had desirable effects in knowledge about diabetes, its symptoms and treatment methods as well as diagnostic and prevention methods. This suggested that education and supplying information resulted in enhancement of health knowledge level of people which, in turn, provided the ground for correction of wrong health behaviors. It also seemed that major information sources such as TV, radio and social media could play important roles in enhancement of people's awareness and health knowledge and be influential in reduction of the disease's burden.

Acknowledgements

We highly appreciate all staffs and persons who helped us in doing this study.

Conflict of interests

The authors declared no conflict of interests.

Authors' contributions

Shirvani M, Azadian F, and Moradian MJ designed research; Shirvani M, Azadian F, and Moradian MJ implemented research; Shirvani M, Karami H, Hemmati A, and Mohammad Reza K preparated manuscript; Shirvani M, Azadian F, Hemmati H and Karimi M had primary

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[DOI: 10.18502/jebhpme.v3i4.2070]

responsibility for final content. All authors read and approved the final manuscript.

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