Usage of a Family Physician Web-based Health Service from 2002 to 2008: An Application for Turkey

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Abstract. The number of people using internet for health information rises day by day. The websites including health serve the community via e-mail and web-based forms. To evaluate the patterns of web-based health service use over a six year-period and the characteristics of users of a family physician website in Turkey. Longitudinal (2002-2008) descriptive study of web users who are the members of a family physician website was performed. The results showed that, most of the users were in the age of 25-34 with 42.4%. 62.5% of users were male, 52.5% of users were single. Forty eight % of website users were from Marmara region, and 63.3% of users belonged to low income group. The percentage of web-based health service users visiting the website before applying to a physician was 52.6% and, 39.2% of users accessed the website for getting information about diseases, sexual health took the second place with 15.3%. It was concluded that, as people get older, the usage rate of web-based health service before applying to a physician decrease gradually. Web-based health service usage before applying to a physician was more preferred in all marital statuses. When the scopes of applications were reviewed it was seen that the questions related to diseases took the first place in all age groups. Questions related to sexual health took the first place for singles whereas for married people, pregnancy related questions took the first place and the adolescence related questions took the second place. The usage of web-based health service before applying to a physician was more than half for all geographic regions except Eastern Anatolian and Aegean regions. The usage of web-based health service before applying to a physician took the first place for mid-level income groups.

Keywords. E-health, Web-based health service, Internet

Bir Aile Hekimliği Web Sağlık Servisinin 2002-2008 Arasında Kullanımı: Türkiye'de bir Uygulama

Özet. Sağlık alanında bilgi edinebilmek için internet kullanan kişi sayısı gün geçtikçe giderek artmaktadır. Web siteleri, topluma web-tabanlı formlar ve e-posta aracılığı ile sağlık hizmeti sunmaktadır. Çalışmada; altı yıllık periyotta (2002-2008), Türkiye'de web-tabanlı sağlık hizmeti kullanımını ve aile hekimi web sitesini kullanan kişilerin karakteristiklerini değerlendirebilmek için bir aile hekimi web sitesine üye olan kullanıcılarının tanımlayıcı istatistiksel çalışması yapılmıştır.

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Sonuçlar; kullanıcıların %42,4 oran ile 25-34 yaş aralığında olduğunu göstermiştir. Kullanıcılardan %65,5'i erkek, %52,5'i bekârdır. Kullanıcıların %48'i Marmara Bölgesi'nden ve %63,3'ü düşük gelir grubundan oluşmaktadır. Bir doktora başvurmadan önce web-tabanlı sağlık hizmeti sunan web sitesini ziyaret eden kullanıcıların oranı %52,6'dır. Kullanıcıların %39,2'si web sitesine hastalıklar ile ilgili bilgi almak için ulaşırken, cinsel sağlık %15,3 ile ikinci sırada yer almaktadır. İnsanların yaşlandıkça bir doktora başvurmadan önce web-tabanlı sağlık hizmetlerini kullanım oranlarının kademeli olarak düştüğü görülmüştür. Doktora başvurmadan önce web-tabanlı sağlık hizmeti kullanımı tüm medeni hallerde tercih edilmiştir. Başvuruların alanları incelendiğinde, tüm yaş gruplarında, genel hastalıklar ile ilgili soruların ilk sırada geldiği görülmüştür. Cinsel sağlık ile ilgili sorular bekarlarda ilk sırayı alırken, evli insanlarda doğum ile ilgili sorular ilk, ergenlik ile ilgili sorular ikinci sırayı almıştır. Doktora gitmeden önce web-tabanlı sağlık servisi kullanımı, Ege ve Doğu Anadolu Bölge'leri hariç tüm bölgelerde yarıdan fazla olmuştur. Doktora başvurmadan önce web-tabanlı sağlık servisi kullanımı orta düzey gelir grubunda ilk sırada yer almıştır.

Anahtar Kelimeler. E-sağlık, Web-tabanlı Sağlık Hizmeti, Internet

Introduction

Electronic health (e-health) refers to all forms of healthcare delivered over the internet [1]. It seems quite clear that e-health encompasses more than a mere technological development. As stated by Eysenbach [2]; e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health service and information delivered or enhanced through the internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology. The definition hopefully is broad enough to apply to a dynamic environment such as the internet and at the same time acknowledges that e-health encompasses more than "Internet and Medicine". New forms of electronic health care service have tremendous potential for improving the quality and efficiency of health care [3-9]. Currently, there are limited quantitative data on the patterns of e-health use or the characteristics of users over time [10].

The primary purpose of this study was to characterize individuals who visited the family physician website between January 2002 and December 2008. Specifically, we aimed to determine the socio-demographic characteristics, search patterns, scope of questions, and selected area by individuals and whether they have used the website before or after they visited the physician. The results of this study may be useful to develop appropriate websites and to modify the current website.

1. Methods

1.1. Design, Setting and Population

We conducted a longitudinal evaluation of the patterns of all 5155 users of a family physician website at any point in time from January 2002 to December 2008. We obtained all data from web-based health service's database. This database includes

information on e-mail, individual socio-demographic characteristics (age, sex, marital status, income level, and region) and whether individuals use the website before or after they apply to a physician. Moreover, this database includes the predetermined scope which was selected by website users. The patients' questions are also stored in the database.

1.2. Web-based Health Service and Use

A web-based form was available on the website. In this form, e-mail, age, sex, marital status, income level, region and whether the individuals used the website before applying to a physician were questioned. The applicants selected an area from predetermined scopes that included; public health, sexual health, men's health, pregnancy, adolescence, disease, hospital treatment, drug, women's health, laboratory, and treatment. In the website, an area was available for the patients to ask their medical questions and within 24 hours, a physician responded to those medical questions.

1.3. Individual Characteristics

The age groups as (15–24, 25-34, 35-44, >45 years old), the marital status as single, married or other (e.g. widowed), gender and income level as low, middle, and high income were obtained. We determined the cities in eight regions (Marmara, Aegean, Black Sea, Central Anatolia, Mediterranean, East Anatolia, and Southeast Anatolia) and out of Turkey. We evaluated medical questions in eleven areas. We also evaluated whether each subject used the website before applying to a physician.

1.4. Statistical Analysis

Descriptive statistics were used. Frequency and cross distribution of variables were obtained. The statistical differences of variables between groups were performed by Chi-square test. We examined differences in web-based health service use in relation to each of variables (age, sex, income region and whether they used the website before applied to a physician and scope they selected). Analyses were performed by using Statistical Package for Social Sciences 11.5.

2. Results

From January 2002 to December 2008, there were 5155 web users who visited web-based health service. The results showed that, most of the users were in 25-34 age groups with 42.4%. Minimum age was 15 while the maximum was 67 and mean age was 29 ± 8.55. 3222 users (62.5%) were male, and 1933 users (37.5%) were female. 2706 users (52.5%) were single, 2384 users (46.2%) were married. The results showed that, 2472 users (48%) were from Marmara region, 1001 users (19.4%) were from Central Anatolia region, 583 users (11.3%) were from Aegean region, 404 users (7.8%) were from Mediterranean region, 234 users (4.5%) were from Black Sea region, 197 users (3.8%) were from out of Turkey, 156 users (3%) were from Southeast Anatolia region, and lastly, 108 users (2.1%) were from Eastern Anatolia region. According to income level, 2923 users belonged to low income group with 56.7%, 1373 users

belonged to middle income group with 26.6%, and 323 users belonged to high income group with 6.3%.

The number of web-based health service users who visited the website before applying to a physician was 2711 (52.6%), on the other hand the number of users who visited after applying to a physician was 2444 (47.4%). Two thousand and twenty two users (39.2%) accessed the website for getting information about diseases, 791 users (15.3%) for getting information about sexual health, 668 users (13.0%) for getting information about men's health, 483 users (9.4%) for getting information about public health, 368 users (7.1%) for getting information about treatment, 257 users (5.0%) for getting information about women's health, 164 users (3.2%) for getting information about hospital treatment, 132 users (2.6%) for getting information about drug/prescription, 104 users (2.0%) for getting information about laboratory, 97 users (1.9%) for getting information about adolescence, and lastly, 69 users (1.3%) accessed the website for getting information about pregnancy.

2.1. The Usage of Web-based Health Service Website Before and After a Physician Examination According to Age Groups

There was no difference between the scopes of questions according to the users age groups (*P*= 0.290).

Table 1. The Usage of Web-based Health Service Website Before and After a Physician Examination According to Age Groups

	Visited web-based health service website					
Age Interval	Before Physician Examination n	%	After Physician Examination n	%	Total n	%
15-24	1009	55.9	796	44.1	1804	100.0
25-34	1122	51.3	1064	48.7	2186	100.0
35-44	423	50.8	409	49.2	832	100.0
45+	157	47.3	175	52.7	332	100.0
Total	**2711**	**52.6**	**2444**	**47.4**	**5155**	**100.0**

2.2. The Usage of Web-based Health Service Website Before and After a Physician Examination According to Sex

When the usage of web-based health service website before and after physician examination evaluated according to sex, there was a difference between users who visited the website before and after a physician's examination (*P*<0.001).

Table 2. The Usage of Web-based Health Service Website Before and After Physician Examination According to Sex

	Visited web-based health service website					
Sex	Before Physician Examination n	%	After Physician Examination n	%	Total n	%
Male	1934	60.0	1288	40.0	3222	100.0
Female	777	40.2	1156	59.8	1933	100.0
Total	**2711**	**52.6**	**2444**	**47.4**	**5155**	**100.0**

2.3. The Scope of Questions According to Sex

There was a difference between the scope of questions when it was evaluated according to the users' gender ($P<0.001$). The difference was derived from men's health, women's health, pregnancy, and hospital treatment in turn (Table 3).

Table 3. The Scope of Questions According to Sex

	Sex					
Scope	Male n	%	Female n	%	Total n	%
Public Health	309	9.6	174	9.0	483	9.4
Sexual Health	470	14.6	321	16.6	791	15.3
Men's Health	663	20.6	5	0.3	668	13.0
Pregnancy	11	0.3	58	0.3	69	1.3
Adolescence	58	1.8	39	2.0	97	1.9
Disease	1270	39.4	752	38.9	2022	39.2
Hospital Treatment	60	1.9	104	5.4	164	3.2
Drug	80	2.5	52	2.7	132	2.6
Women's Health	19	0.6	238	12.3	257	5.0
Laboratory	61	1.9	43	2.2	104	2.0
Treatment	221	6.9	147	7.6	368	7.1
Total	**3222**	**100.0**	**1933**	**100.0**	**5155**	**100.0**

2.4. The Scope of Questions According to Marital Status

When it was evaluated according to marital status there was no difference between users who visited the website before and after a physician's examination ($P=0.070$). There was a difference between the scope of questions when it was evaluated according to the users' marital statutes ($P<0.001$). The difference was derived from pregnancy, adolescence and hospital treatment in turn (Table 4).

Table 4. The Scope of Questions According to Marital Status

	Marital Status							
Scope	Single n	%	Married n	%	Other n	%	Total n	%
Public Health	260	9.6	214	9.0	9	13.8	483	9.4
Sexual Health	457	16.9	331	13.9	3	4.6	791	15.3
Men's Health	366	13.5	293	12.3	9	13.8	668	13.0
Pregnancy	1	0.0	67	2.8	1	1.5	69	1.3
Adolescence	29	1.1	66	2.8	2	3.1	97	1.9
Disease	1068	39.5	931	39.1	23	35.4	2022	39.2
Hospital Treatment	77	2.8	81	3.4	6	9.2	164	3.2
Drug	68	2.5	62	2.6	2	3.1	132	2.6
Women's Health	119	4.4	134	5.6	4	6.2	257	5.0
Laboratory	59	2.2	43	1.8	2	3.1	104	2.0
Treatment	202	7.5	162	6.8	4	6.2	368	7.1
Total	**2706**	**100.0**	**2384**	**100.0**	**65**	**100.0**	**5155**	**100.0**

2.5. The Usage of Web-based Health Service Website Before and After a Physician Examination According to Income Level

When it was evaluated according to regions there was no difference between users who visited the website before and after a physician's examination ($P=0.310$). According to income level there was a difference between users who visited the website before and

after a physician's examination ($P<0.001$). There was no difference between the scope of questions according to the users' income levels ($P=0.570$).

Table 5. The Usage of Web-based Health Service Website Before and After a Physician Examination According to Income Level

	Visited web-based health service website					
Income Level	Before Physician Examination n	%	After Physician Examination n	%	Total n	%
Low	1495	51.1	1428	48.9	2923	100.0
Medium	750	54.6	623	45.4	1373	100.0
High	128	39.6	195	60.4	323	100.0
Total	**2373**	**51.4**	**2246**	**48.6**	**4619**	**100.0**

2.6. The Scope of Questions According to Visiting the Website Before and After a Physician Examination

When it was evaluated according to the scope of questions there was a difference between users who visited the website before and after a physician's examination ($P<0.001$). The difference was derived from hospital treatment, drug, sexual health, men's health, treatment, and laboratory in turn (Table 6).

Table 6. The Scope of Questions According to Visiting the Website Before and After a Physician Examination

	Visited web-based health service website					
Scope	Before Physician Examination n	%	After Physician Examination n	%	Total n	%
Public Health	255	9.4	228	9.3	483	9.4
Sexual Health	515	19.0	276	11.3	791	15.3
Men's Health	405	14.9	263	10.8	668	13.0
Pregnancy	35	1.3	34	1.4	69	1.3
Adolescence	59	2.2	38	1.6	97	1.9
Disease	1057	39.0	965	39.5	2022	39.2
Hospital Treatment	40	1.5	124	5.1	164	3.2
Drug	30	1.1	102	4.2	132	2.6
Women's Health	119	4.4	138	5.6	257	5.0
Laboratory	38	1.4	66	2.7	104	2.0
Treatment	158	5.8	210	8.6	368	7.1
Total	**2711**	**100.0**	**2444**	**100.0**	**5155**	**100.0**

3. Discussion

Access and use of web-based health services are growing rapidly. Use of these kinds of services appears to be the greatest among people with more medical need. However, the majority of subjects do not use any web-based health services. More research is needed to determine potential reasons for disparities in web-based health service use. This is the first study in this field in Turkey.

As people get older, the usage rate of web-based health service before applying to a physician decrease gradually. Using web-based health service before applying to a physician was more preferred in all marital statuses. When the scopes of applications were reviewed it was seen that the questions related to disease area had taken the first

place in all age groups. Questions related to sexual health took the first place for singles whereas while for married, pregnancy related questions took the first place and adolescence related questions took the second. The data was also decomposed according to geographic regions; using web-based health service before applying to a physician was more than half for all geographic regions except Eastern Anatolian and Aegean regions. The usage of web-based health service before applying to a physician took the first place for mid-level income groups. Questions related to sexual health took the second place in all regions except the Eastern Anatolian and Black Sea region. Questions related to sexual health took the first place for using web-based health service before applying to a doctor while for using web-based health service after applying to a physician; drug related questions took the first. All the findings were important indicators as they specify the usage of web-based health service among Turkish Internet users.

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