

# Increased Demand for E-mail Health Consultation Service: Analysis of a Web Survey

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## ABSTRACT

*The aim of the study was to explore characteristics of the users of the Interactive Service »Your Questions« that is based on E-mail health consultations. We wanted to find out what motivated users to use it, were they satisfied with it and what were its impacts on their health behavior. Therefore, we developed a Web survey and invited 2,747 users to take part in it. 919 (33.5%) of users responded. Results showed that the majority of respondents were women (79.1%) and that most hold at least a college degree (52.4%). The Service was mostly used for obtaining information about certain medical symptoms or medical conditions (50.1%), for a second opinion on a diagnosis (18.6%) and for more information about medical treatment (14.4%). In terms of Service features, it was used because of its convenience with regard to time (38.7%) and a sense of privacy (25.7%). Before posting a question to the Service, 93.2% of the respondents searched for health articles on the PLIVAzdravlje portal while 90% of them read the Questions and Answers database. Over half of them (61.8%) posted their question after they already visited their physicians on that particular issue. Nevertheless, 48% of them were encouraged to visit their physicians after they received the answer. The results show an important trend of increased demand for e-mail health consultation and the need for reliable medical information, with one thousand questions submitted to the Service in the observed period of 40 days. If the source of medical information is reliable, as in case of our Service as well as other forms of e-mail health consultations, it can have positive impact on valuable physician-patient communication based on knowledge and mutual understanding.*

**Key words:** e-mail, health consultations, PLIVA zdravlje, physician-patient communication

## Introduction

The growing popularity of the Internet has revolutionized access to health information and changed the traditional role of the physician who was primary, and usually, the only source of health related information. Health topics are among the most common reasons for searching the Internet. Eighty percent of Internet users in USA<sup>1</sup> and over seventy percent of Internet users in western Europe<sup>2</sup> use the Internet when searching for health related information.

In Croatia, in 2007, 39% of the general population used the Internet<sup>3</sup> which is just above the average for the Central and Eastern Europe region (38%). Many Internet users in Croatia also search for health related information online – the most popular health portal in Croatia, PLIVAzdravlje.hr reached 417,413 visits *per month*<sup>4</sup>. Besides providing reliable health related information in the form of a Handbook of diseases, articles

and news, users can submit their health related questions to the Interactive Service »Your Questions«. Received questions are answered by family physicians or specialists and answers are sent to users' via e-mail.

In February 2007 the Service was re-introduced after a break in availability. In the first 40 days we received one thousand questions regarding 13 different health categories. This enormous interest drew our attention and motivated us to start analyzing the questions. We found that the most frequently sought categories were Female Health (21.8%), Pregnancy (10.1%) and Dermal and Venereal Diseases (12.8%). Regarding question type, in most cases users needed primary information about a certain medical problem. Very often they needed more information about a certain medical problem after visiting their physicians or a second opinion<sup>5</sup>. We wanted to explore this phenomenon in more depth, so we developed a

Web survey and invited users of the Service to take part in it.

This paper presents the results the Web survey that was conducted with aims: to collect basic information about the users; to understand the reasons why they used the Service; to check the satisfaction with the Service; to predict impacts of the Service on users' further health behavior.

## Subjects and Methods

### Subjects

Recruitment for the survey was done by e-mail invitations that were sent to all users who submitted at least one question during the period of 40 days after re-launching the Service in February 2007.

### Survey

A web survey that was created for this purpose was accessible exclusively through uniquely generated hyperlinks sent in an invitation e-mail to each user of the Service. The survey was created using PHP script language. Answers could only be submitted if all questions were answered. The survey consisted of 19 questions listed on a single Web page. Estimated time needed for answering and submitting the survey was 5–10 minutes. Formats of answers in the survey included one choice, multiple choice and free text answer.

### Statistical analysis

According to the nature of collected data and the fact that the data was collected on one occasion, statistical analysis was descriptive: mean, standard deviation for continuous variables; category counts and frequencies (percentages) for non-continuous variables. Survey answers were analyzed using Excel (ver. 2003; Microsoft, Seattle, WA). Confidence interval for the survey sample size was calculated using survey sample size calculator (Creative Research Systems, Petaluma, CA).

## Results

The invitation to take part in the Web survey was sent to 2747 unique e-mail addresses. During the availability period of two weeks, 919 users (33.5%) took part in the survey. At a 95% Confidence level, the response rate provided us with Confidence interval of 2.6.

The basic characteristics of respondents including gender, level of education and country of origin are presented in Table 1. The vast majority of respondents submitted the question regarding their own problem (70.4%), while a quarter of them submitted the question regarding problem of their family member (26.3%). The mean age of respondents was 30 (SD=7.4). Over two thirds of respondents used the Service from home (77.5%). 36.7% of respondents confirmed using the Service more than once.

**TABLE 1**  
GENDER, LEVEL OF EDUCATION AND COUNTRY OF ORIGIN OF RESPONDENTS

|                              | No. (%)    |
|------------------------------|------------|
| Gender                       |            |
| Women                        | 727 (79.1) |
| Men                          | 192 (20.9) |
| Total                        | 919 (100)  |
| Education                    |            |
| College or university degree | 480 (52.4) |
| High school degree           | 428 (46.6) |
| Elementary school degree     | 11 (1)     |
| Total                        | 919 (100)  |
| Country of origin            |            |
| Croatia                      | 665 (72.4) |
| Bosnia and Herzegovina       | 146 (15.9) |
| Serbia                       | 43 (4.7)   |
| Macedonia                    | 23 (2.5)   |
| Other                        | 42 (4.6)   |
| Total                        | 919 (100)  |

Analysis of health related issues that motivated respondents to use the Service revealed that 50.1% of respondents needed more information about a certain medical symptom or medical condition, 18.6% needed a second opinion on a diagnosis while 14.4% needed more information about medical treatment.

When asked if they searched PLIVAZdravlje portal regarding the medical condition concerned before submitting the question to the Service, 93.1% of respondents confirmed searching for articles and 90% confirmed reading the Questions and Answers database.

When asked if they visited their physicians before submitting the question to the Service, the majority of respondents (61.8%) confirmed that they did. The percentage of users who visited their physicians in regard to the category showed that users who submitted questions regarding Epilepsy, Nervous system or Cardiovascular system, previously visited their physicians in 88.2%, 80.9% and 80.8% respectively. In the case of Female health, Pregnancy or Diabetes, this was the case in 54.6%, 48.9%, and 42.9%, respectively.

When asked what was the most important general reason for using the Service, respondents identified the possibility to post the question at any time, the sense of privacy and the fact that their physicians are too busy to answer their questions as the most important reasons (38.7%, 25.7% and 18.6%, respectively).

When asked what they will do after they received the answer, almost half of respondents said that they will visit their physicians (48%). In regard to category, the most respondents that will visit their physicians belong to Male health, Dermal and Venereal Diseases and Female health (62.2%, 52.6% and 51.9%, respectively). In the case of Mental health, Cardiovascular Diseases and

**TABLE 2A**  
SATISFACTION WITH THE SERVICE

| Are you generally satisfied with the answer you received? | No. (%)    |
|---|------------|
| Yes   | 588 (64)   |
| No, it was to short                                       | 112 (12.2) |
| No, it was to simple comparing to my question             | 90 (9.8)   |
| No, it had to many complicated words                      | 7 (0.8)    |
| No, other (free text answer)                              | 122 (13.3) |
| Total   | 919 (100)  |

**TABLE 2B**  
REASONS FOR DISSATISFACTION WITH THE SERVICE;  
CATEGORIZATION OF FREE ANSWERS

| Category                                | No. (%)   |
|---|-----------|
| I did not receive the answer            | 59 (48.4) |
| The answer did not refer to my question | 20 (16.4) |
| The answer was to general               | 16 (13.1) |
| I was advised to visit my physician     | 14 (11.5) |
| I was asked to reformulate the question | 6 (4.9)   |
| I waited for the answer for to long     | 2 (1.6)   |
| Missing data                            | 5 (4.1)   |
| Total                                   | 122 (100) |

Neurology, only less than half of respondents planned to visit their physicians (48%, 36.2% and 15.8%, respectively).

Overall, 64% of respondents were generally satisfied with the Service. Reasons for dissatisfaction are presented in Table 2a and 2b. When asked if they found the answer to their question to be absolutely or partially precise, 76.2% of all respondents answered »yes«. 120 respondents (13.1%) used the opportunity to suggest improvements for the Service in form of free text answer. Their suggestions are categorized and presented in Table 3.

## Discussion and Conclusion

The results are not representative for the whole population of Internet Users in Croatia and the Croatian language region. However, we consider them to be unique and interesting because they show great interest for medical information and an increased demand for e-mail based health consultations.

Respondents belong to a group of typical Internet health information seekers<sup>6</sup>: they are mostly adult females with at least a college level education. They use the Internet for searching health related information mostly from their homes.

Many respondents used the Service more than once. The vast majority of all respondents already searched for health articles on-line and over half of them already vis-

**TABLE 3**  
SUGGESTIONS FOR SERVICE IMPROVEMENT;  
CATEGORIZATION OF FREE ANSWERS

| Category  | No. (%)   |
|---|-----------|
| You should reply in shorter period of time                                    | 48 (40)   |
| Answers should be more precise  | 26 (21.7) |
| Answers should be more detailed   | 10 (8.3)  |
| Searching Questions and Answers repository should be made more simple         | 6 (5)     |
| Include more specialists  | 4 (3.3)   |
| You should enable direct contact with th physicians (e-mail, chat, telephone) | 4 (3.3)   |
| You should add a pictures to answers  | 3 (2.5)   |
| You should open new categories  | 2 (1.7)   |
| Other   | 17 (14.2) |
| Total   | 120 (100) |

ited their physicians. Those are the facts showing the great interest for health information and willingness to take active part in the healthcare process. This trend of patients' empowerment corresponds to other studies<sup>7</sup> and because of it, the process of healthcare decision making is becoming more complex, including active discussion about best available evidence about options, potential benefits and harms of treatment or diagnostic procedure. For physicians to be able to conduct individualized, evidence-based care consistent with patient's knowledge, experience, values and preferences, a successful communication with the patient is a priority.

E-mail based, free of charge medical consultation carried out by family physicians and specialists via the Interactive Service »Your Questions« has become well utilized because of its flexibility, privacy and ideal possibility to access medical professionals with questions on probably less urgent, but sensitive health issues, mostly regarding Female Health and Dermal and Venereal Diseases<sup>5</sup>. Papers that evaluated the convenience of e-mail communication between patient and physician found that those patients who used e-mail to communicate with physicians perceive this means of communication as not only more convenient and faster than telephone communication but also as increasing access to medical care<sup>8</sup>. Since over half of respondents confirmed that they will visit their physicians, we found this result indicative of them being encouraged to visit their doctors and to establishing more comprehensive and effective communication with them. Ultimately, that could facilitate the process of achieving desirable outcomes, lower patients' stress levels, improve their knowledge and understanding of the condition and increase adherence with therapeutic recommendations and interventions<sup>9,10</sup>.

E-mail communication has properties that make it useful in providing healthcare. It can promote physician-patient communication, save time, and possibly reduce costs of healthcare<sup>11</sup>. While physicians can not devote enough time to achieve quality communication with

patients, patients demand more and more information in order to be able to take part in their own healthcare decision making. One paper found that patients who search for medical information online may have difficulty finding complete and accurate information which could potentially lead to negative influence on their health decisions<sup>12</sup>. 15% of our respondents will keep searching for more information online and it is to be expected that less than one fifth of them will always check the source and date of the health information<sup>13</sup>. This could have clinical implications in terms of need for physicians to identify patients who use the Internet for searching medical information and to understand how they are using Internet as a source of medical information.

Many of the health topics sought by our users were topics commonly encountered by physicians in the primary care setting, namely women's health (categories Female health, Dermal and Venereal Diseases and Pregnancy)<sup>5</sup>. Although most users of PLIVAZdravlje are women<sup>14</sup> it could also be indicative of the excessive workload in women's health primary care settings.

Patients who asked questions regarding Epilepsy, Nervous system or Cardiovascular system visited their physicians before in over eighty percent. This result leads us to the conclusion that patients with chronic diseases, namely of a neurological or cardiovascular nature, do not receive enough information from their health care providers.

We see this and other types of e-mail health consultation as an opportunity for preserving and improving valuable physician-patient communication on the basis of knowledge and mutual understanding. When approached to in professional, appropriate and ethical way<sup>15</sup> following the published guidelines for use of e-mail with patients<sup>16,17</sup>, it could be employed at all levels of healthcare.

The main limitation of this study is the convenient sample that cannot be used for generalization of the re-

sults. However, we showed an interesting trend of increased demand for e-mail based health consultations. Respondents mostly used the Service for its convenience and sense of privacy, probably because they are too busy to spend time waiting at physicians' offices for minor health issues. Nevertheless, almost half of them decided to visit their physicians after they received the answer. Respondents were interested in taking part in their healthcare based on reliable medical information and according to the nature of the questions they posted; they showed great trust and openness towards this modern way of communication.

In regard to satisfaction with the Service, most respondents were generally satisfied with it. The main reasons for dissatisfaction were that the answer was too short or it had too many complicated words. Most of the respondents had no suggestions for its improvement, while the majority of those who had suggestions wanted to receive the answers more quickly. This survey enlightened users' perception of the Service and the answers they received. We were aware that some users waited for the answer for several days, even a week and that at the time of taking part in the survey some of them still did not receive an answer. This drawback can and will be addressed by expanding the network of physicians. Many other reasons for dissatisfaction with the Service are due to the nature of e-mail communication itself and the approach of our physicians who try to address the problem on the level of improving understanding and knowledge, without giving specific recommendations and always suggesting a visit to the physician's office.

In the future, it would be interesting to conduct studies of attitude towards e-mail based health consultations among both patients and healthcare providers in Croatia and the region as well as to explore its use and impact on healthcare quality at different healthcare settings with different patient populations.

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## **SVE VEĆA POTREBA ZA KORIŠTENJEM E-MAIL SERVISA ZA MEDICINSKE KONZULTACIJE: ANALIZA WEB ANKETE**

### **S A Ž E T A K**

Cilj ove studije bio je ispitati tko su korisnici interaktivnog servisa »Vaša pitanja« koji se temelji na medicinskoj konzultaciji putem elektroničke pošte. Zanimalo nas je što je korisnike motiviralo na korištenje servisa, da li su zadovoljni i kakvi su učinci korištenja na njihovo zdravstveno ponašanje. Razvili smo Web anketu i pozvali 2,747 korisnika servisa da sudjeluju u njoj. Anketu je ispunilo 919 korisnika (33,5%). Većina korisnika servisa bile su žene koje su imale barem visoku stručnu spremu (52,5%). Njihovi medicinski razlozi za korištenje servisa su bili: dobivanje više informacija o nekoj bolesti ili medicinskom stanju (50,1%), dobivanje drugog mišljenja ili dobivanje više informacija o terapiji (14,4%). Najčešći razlozi za korištenje servisa su bili mogućnost da se pitanje postavi u bilo koje doba (38,7%) i osjećaj privatnosti (25,7%). Prije postavljanja pitanja, 93,2% korisnika koji su sudjelovali u anketi tražilo je medicinske članke vezane za dotični medicinski problem na portalu PLIVAzdravlje, dok ih je 90% čitalo bazu pitanja i odgovora. Preko polovice njih (61,8%) postavilo nam je pitanje nakon što su već zbog istog problema posjetili svog liječnika. Međutim, 48,8% ih je ohrabreno odgovorom odlučilo posjetiti liječnika. Ovi rezultati pokazuju važan trend povećanih zahtjeva za medicinskom konzultacijom temeljenom na elektroničkoj pošti kao i za pouzdanim medicinskim informacijama, s obzirom da je u promatranom periodu od 40 dana pristiglo tisuću pitanja. Ako je izvor medicinske informacije pouzdan, kao što je slučaj s našim servisom i drugim oblicima medicinske konzultacije temeljene na elektroničkoj pošti, smatramo da to može imati pozitivne učinke na vrlo važnu komunikaciju između liječnika i pacijenta temeljenu na znanju i uzajamnom razumijevanju.