

PREFERENCE FOR LABORATORY TEST RESULTS NOTIFICATION AMONG DIFFERENT HEALTHCARE PLAYERS IN NORTHEASTERN BULGARIA

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ABSTRACT

INTRODUCTION: With the continuously growing number of people using online sources for health information and services, the concept of eHealth is progressively developing and it is a high-priority topic for the European Union. The absence of centralized internet-based eHealth platform in Bulgaria results in deficiency in the information exchange among physicians and other healthcare providers. The question about the readiness and the attitude towards the eHealth concept among all participants in the healthcare system in Bulgaria still remains to be clarified and the purpose of the current study is to assess the opinion of healthcare providers and consumers about the electronic way of receiving laboratory test results. We also try to explore the existing preference trend in relation to the socio-demographic characteristics of the studied population.

MATERIALS AND METHODS: In the current work, we investigated the needs and recommendations of 1039 patients, laboratory staff and out-of-hospital general practitioners in Northeastern Bulgaria (regions of Varna, Dobrich and Shumen).

RESULTS: The results show that laboratory results are preferred in electronic form and there is a significant need for better online communication between different participants in the healthcare system. In this context, we also summarize a model for improvement in the interaction among healthcare providers.

CONCLUSION: The actual opportunities for online communication provoke active participation of all players in the health service market and require a novel model of communication among healthcare providers.

Keywords: communication, feedback information, laboratory tests, e-Health

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Received: March 29, 2016

Accepted: December 18, 2016

INTRODUCTION

eHealth (electronic processes in health) refers to transfer of health resources and health care via electronic technologies. It has three main issues: (a) providing actual health information to medical specialists and consumers via the Internet; (b) public health improvement as a result of electronic life-long training of healthcare workers; and (c) e-based commerce and business practices in the healthcare manage-

ment(1). The concept of eHealth, although not unanimously defined and accepted, is progressively developing and is a high-priority topic for the European Union.

A continuously growing number of people (between 60 and 95% of population in different countries) is using online sources for health information and services (2). In parallel with the increased need, the amount of available health information on the web is also rapidly expanding. The developing technologies have many advantages, such as easier access to specialized information or medical advice but represent a real challenge to the current health system. The major concerns are about the inequality among different participants, especially the level of their computer literacy (3). Elderly, people living in remote villages and low-income social groups have limited access to internet and therefore cannot benefit from the eHealth concept. In addition, the rapid development in technologies necessitates well-functioning social network to connect medical doctors, dentists, laboratories, pharmacists, companies, institutions and patients. The absence of centralized internet-based eHealth platform in Bulgaria results in deficiency in the information exchange among physicians and other healthcare providers, as well as in the communication with end-users. However, examples of successful local implementation of eHealth concept exist in Bulgaria – most of the medical diagnostic laboratories in the country have their own internet-based platforms for easier access to the lab results of both consumers and physicians in charge. Some attempts to organize a national eHealth platform have also been recorded (<http://www.credoweb.bg/>). Many efforts are still needed as the current partial system requires implication of common European standards, compatibility of health products and services, as well as unification of semantics, language and law. The EU experience shows that technical and technological issues are solvable, but the legislation and national-level funding are more challenging (4). The latter ones are national priorities in Bulgaria and the actual Charter of Consumer Rights in the Public Health, which specifies the administrative services and their improvements clearly addressed to users (5). To achieve the expected advance in the communication and interaction, we need higher coordination and synchronization of the individual activities

and information exchange among the different partners (6). The question about the readiness and the attitude towards the eHealth concept among all participants in the health care system in Bulgaria still remains to be clarified. Most of the physicians express positive attitude towards information technologies and recognize the need of computer literacy (7), but the actual expectations about using electronic information systems, especially in the field of laboratory testing are unknown. Therefore, the purpose of the current study is to assess the opinion of healthcare providers and consumers about the electronic way of receiving laboratory test results. We also try to explore the existing preference trend in relation to the socio-demographic characteristics of the studied population.

MATERIALS AND METHODS

During the period July-September, 2015, we have studied the opinion of 1039 patients, GPs, laboratory technicians and laboratory doctors in Northeastern Bulgaria – Varna, Dobrich and Shumen regions. The responders were divided into three groups:

1. First group – 502 patients of different gender and age (over 18 years), selected randomly and contacted immediately after a visit to a medical diagnostic laboratory or a general practitioner (GP).
2. Second group – 52 clinical laboratory doctors (from 63 registered in the list of Bulgarian Medical Association for the studied regions) and 96 laboratory assistants (more than 90% of all laboratory professionals). All outpatient laboratories in the regions of Varna, Dobrich and Shumen were included.
3. Third group – 389 GPs working in individual or group practices in the regions of interest. The distribution of GPs among the three regions was as follows: Varna – 262, Dobrich – 69 and Shumen – 58. This covers 64% of all GPs in the studied regions.

We used a short questionnaire which was distributed among participants and collected in the same day. The questionnaire was divided into 2 main sections: (1) descriptive demographic and work- (or residence-) related characteristics (age, sex, place of residence – for the first group of responders or age, sex, type and years of work experience and place

of practice – for the second and third group of responders); (2) attitude towards internet-based laboratory services – including a question about the preferred way to receive test results and an open question concerning recommendations to medical diagnostic laboratories.

The anonymity of participants was guaranteed and their oral informed consent was obtained before completion of the questionnaire and after clear description of study objectives.

The statistical analyses used were descriptive statistical methods, contingency table analysis and chi-square. All statistical analyses were performed with EpiInfo7. A p-value of <0.05 was considered statistically significant.

RESULTS

Socio-Demographic Characteristics of the Studied Sample

From 502 patients enrolled in our survey, 75.2% were from Varna region, 13% - from Dobrich region and 11.8% - from Shumen. The mean age of the sample was 51.1 years with range from 18 to 90 years. Women were 56.3% and men – 43.7%.

In the group of clinical laboratory doctors and laboratory assistants, the latter ones were predominant being 67.2%. Most of the specialists working in laboratories in Northeastern Bulgaria were women (91.5%) and the mean age of the sample was 45.3 years (range 21-68). Laboratory specialists were mainly from the Varna region (60.4%), followed by the Dobrich region (22.4%) and Shumen (17.2%). The majority of them were working in the main cities of the studied regions (75.4%), while 24.6% were working in small towns and villages.

The same patterns were observed in the residence and age distribution in the third group of responders. Most of the GPs were from the region of Varna (67.1%), followed by those from the region of Shumen (17.4%) and the region of Dobrich (15.6%). Seventy-one percent of responding GPs were from the big cities and only 29.3% were from small towns and villages of the three studied regions. Approximately 60% of all participating GPs were females. The age ranged between 35 and 65 with a mean of 48.9 years.

Attitude Towards Online Receiving of Laboratory Results

In the group of the patients, electronic results were preferred by almost 42% of the sample, followed by 40% wishing to receive them in the laboratory and 18.2%, who preferred to receive their results from the physician in charge (Fig. 1). Most (51.6%) of the technicians and doctors working in medico-diagnostic laboratories considered that patients prefer to receive their lab test results via the Internet. Approximately 26% of the responders in this group pointed out receiving in the lab as the most preferable, and 22.1% favored receiving from the physician in charge. Almost the same opinion was shared by GPs – in their view patients prefer electronic results (57.1%) to receiving directly from the lab (29.4%) or from the doctor in charge (13.4%).

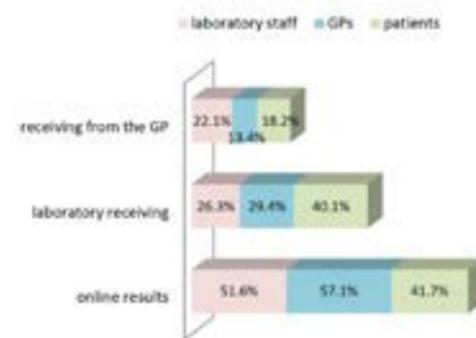


Fig. 1. Laboratory staff, GPs and patients assumption regarding the preferred way for laboratory results receiving

A difference was found between beliefs of medical specialists from big cities (Varna, Shumen and Dobrich) and from small towns and villages. The major proportion (50%) of doctors and laboratory technicians working in the main cities of the region assumed patients preferred to receive results online, followed by direct obtaining from the laboratory (32%) or from the GP (18%). Responders (laboratory staff and GPs) in small towns and villages shared almost the same preference for online receiving (41%) and personal receiving of results from the laboratory (37%), followed by contact with the ordering doctor (22%) (Table 1). Patients in big cities (Varna, Dobrich, Shumen) preferred to receive their lab test results online (41%) to personal collection from the lab-

oratory (28%) or physician in charge (31%). Most of the patients in the rural areas (45%) wished to receive their results from the doctor in charge rather than via an online platform (30%) and the smallest proportion (25%) agreed direct contact with the lab to be the most desirable way (Table 1). The difference in the proportions regarding the preferences of patients from different in size place of residence is statistically significant.

Table 1. Preference for a way of receiving laboratory results in responders from big cities (Varna, Dobrich and Shumen) and from small towns and villages

	Big cities	Small towns and villages	Chi-square	p-value
Medical specialists				
Laboratory receiving	32%	37%	1.04	0.3
Receiving from the GP	18%	22%	0.9	0.34
Online result	50%	41%	3.27	0.07
Patients				
Laboratory receiving	28%	25%	0.16	0.69
Receiving from the GP	31%	45%	8	0.005
Online result	41%	30%	5.52	0.019

The criticism of responders focused on insufficient number of healthcare providers in small towns and villages; weak coordination and communication between different players in the public health system; and need of higher qualification of the involved specialists.

Most of the responders in the group of GPs recommended better feedback and unified electronic platform to facilitate the access of GPs and patients to the lab results. The second largest group of participants (25%) answered „Other“ to the recommendation question and pointed out suggestions as prop-

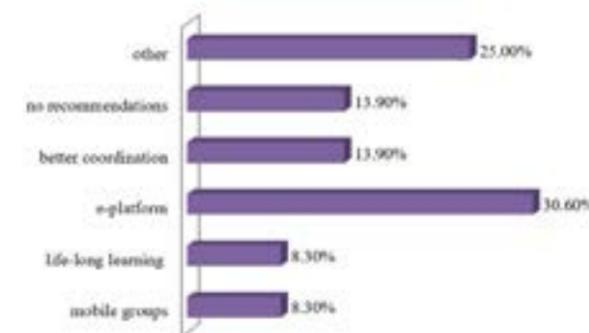


Fig. 2. Recommendations of GPs towards laboratories

er blood processing (especially during the transport from elongated villages) or more responsive and kind laboratory staff. At third place were the recommendations for better coordination and communication – 13.9%. The same proportion of doctors (13.9%) had not given any recommendations. Approximately 8% of GPs approved mobile groups or labs in villages and small towns and 8.3% thought life-long learning to be essential for better laboratory performance (Fig. 2).

DISCUSSION

The results from our study show clearly the readiness and the positive attitude among all participants in healthcare towards the use of online systems for laboratory results communication. Providers and consumers are both convinced that electronic receiving is the most preferred and comfortable way for patients to receive their results. The major recommendations for lab improvement also concern the establishment of an effective electronic platform for online result communication. This leads to the need of a new model for electronic platform under the form of social network. Well-functioning and high-effective systems exist in Japan (8), China (9), USA (10) and many European countries (11). For all people accepting the health concept as life style, the creation of a social network will facilitate communication and information access. This will give new possibilities for interactive health products and services. In the social network all health providers registered (doctors, patients, institutions) will have permanent access to current information, test results, data exchange and feedback. The competence, achievements and professional experience could be easily accessible. The ob-

tained information could help to restore the trust in the health system and to create a new quality-based business approach in the medical field. With such a platform, the consumers will be able to make an optimal choice of a specialist (e.g. laboratory). They could also directly communicate with doctors, institutions and organizations to facilitate the obtaining of the newest information and expert consultation. In this platform, institutions, such as Ministry of Health, National Health Insurance Fund, Bulgarian Drug Agency, Bulgarian Medical Association, Bulgarian Pharmaceutical Union, scientific organizations and patients associations could participate. This will be an excellent way to improve the communication among all considered players. In the same time the transparency of the process will be guaranteed (Fig. 3).

the health budget; the total deficiency in the communication among the patients and health providers.

CONCLUSIONS

The new possibilities for online communication encourage the active participation of all players in the health service market. With the implementation of a working e-Health model the patients will receive better orientation in the market and facilitated medical access. Our study shows that the need for a more electronically oriented health care management, especially in the field of laboratory testing, already exists. Both providers and end-users are continuously seeking faster, easier and better communication. The positive attitude is widely declared but still remains to be realized especially in small towns and villages.

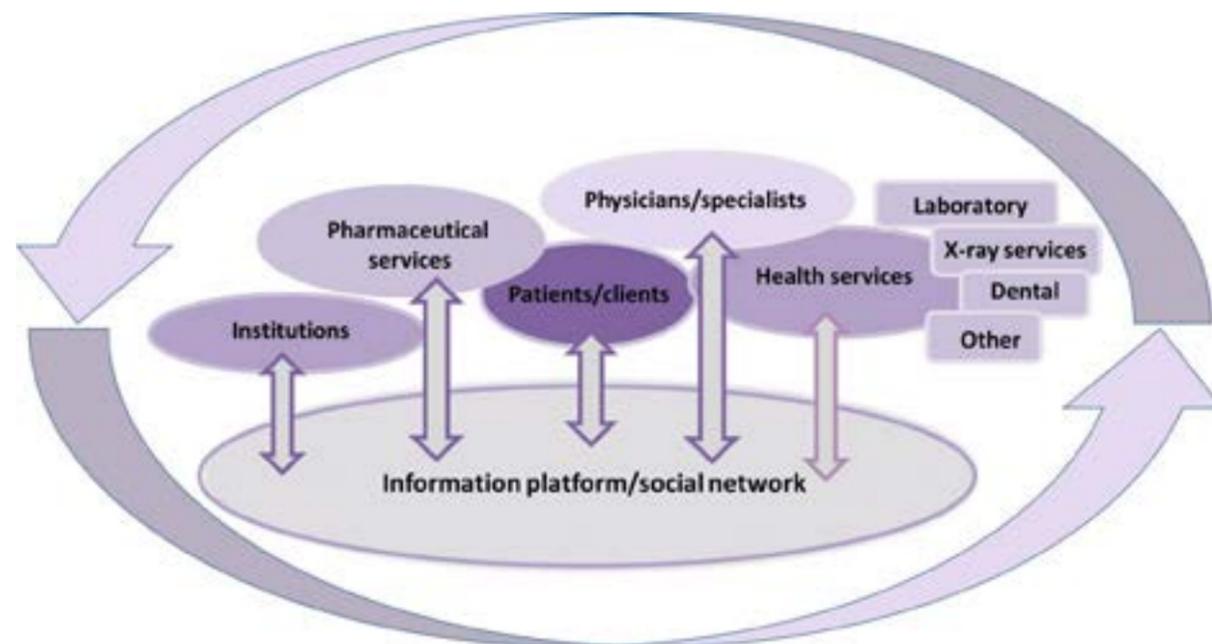


Fig. 3. A possible model of health information system

The generated information in the form of a database will lead to better management of the public health in Bulgaria. With an electronic platform, the major problems in our public health will be minimized: the absence of patients' registry (by region and by diagnosis); the absence of electronic patient's file and e-Health card; the absence of e-prescriptions; the absence of transparency in the management of

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