Social Networks in Improvement of Health Care

Izet Masic¹, Suad Sivic², Selim Toromanovic³, Tea Borojevic⁴, Haris Pandza⁵

Faculty of medicine, University of Sarajevo, Bosnia and Herzegovina¹

Faculty for health sciences, University of Zenica, Bosnia and Herzegovina²

Faculty for Health Sciences, University of Bihac, Bosnia and Herzegovina³

Pliva, Zagreb, Croatia⁴

General hospital Sarajevo, Bosnia and Herzegovina⁵

Corresponding author: Prof Izet Masic, PhD. E-mail: imasic@lol.ba

PROFESSIONAL PAPER

SUMMARY

Social network is a social structure made of individuals or organizations associated with one or more types of interdependence (friendship, common interests, work, knowledge, prestige, etc.) which are the “nodes” of the network. Networks can be organized to exchange information, knowledge or financial assistance under the various interest groups in universities, workplaces and associations of citizens. Today the most popular and widely used networks are based on application of the Internet as the main ICT. Depending on the method of connection, their field of activity and expertise of those who participate in certain networks, the network can be classified into the following groups: a) Social Networks with personal physical connectivity (the citizens’ associations, transplant networks, etc.), b) Global social internet network (Facebook, Twitter, Skype), c) specific health internet social network (forums, Health Care Forums, Healthcare Industry Forum), d) The health community internet network of non professionals (DailyStrength, CaringBridge, CarePages, MyFamilyHealth), e) Scientific social internet network (BiomedExperts, ResearchGate, iMedExchange), f) Social internet network which supported professionals (HealthBoards, Spas and Hope Association of Disabled and diabetic Enurji), g) Scientific medical internet network databases in the system of scientific and technical information (CC, Pubmed/Medline, Excerpta Medica/EMBASE, ISI Web Knowledge, EBSCO, Index Copernicus, Social Science Index, etc.). The information in the network are exchanged in real time and in a way that has until recently been impossible in real life of people in the community. Networks allow tens of thousands of specific groups of people performing a series of social, professional and educational activities in the place of living and housing, place of work or other locations where individuals are. Network provides access to information related to education, health, nutrition, drugs, procedures, etc., which gives a special emphasis on public health aspects of information, especially in the field of medicine and health care. The authors of this paper discuss the role and practical importance of social networks in improving the health and solving of health problems without the physical entrance into the health care system. Social networks have their advantages and disadvantages, benefits and costs, especially when it comes to information which within the network set unprofessional people from unreliable sources, without an adequate selection. The ethical aspect of the norms in this segment is still not adequately regulated, so any sanctions for the unauthorized and malicious use of social networks in private and other purposes in order to obtain personal gain at the expense of individuals or groups (sick or healthy, owners of certain businesses and companies, health organizations and pharmaceutical manufacturers, etc.), for which there is still no global or European codes and standards of conduct. Cyber crime is now one of the mostly present types of crime in modern times, as evidenced by numerous scandals that are happening both globally and locally.

Keywords: social networks, health care, public aspects of health information.

1. INTRODUCTION

Social network is a social structure made of individuals (or organizations) that represents “nodes” and they are associated with one or more types of interdependency, such as friendship, common interests, work, knowledge, prestige, and many other interests. So, social networking is the networking of individuals or small groups in certain groups. Such networks can operate at many levels from the level of families, levels of specific population groups to the level of the nations. They can play a key role from solving the problem of an individual to launch of joint actions (1).

Network theory was developed in the 1970’s aimed at understanding human behavior through social relations. Since then, social networks have become a stronghold of scientific research in the social behavior in case of large outbreaks of infectious diseases, disability, accidents, and in understanding how people react to crisis situations. Social networks have shown a dramatic frequency and transmission patterns of infectious diseases such as HIV, but also chronic diseases such as cardiovascular diseases (2).

Networks can be organized in order to exchange information, knowledge or financial support. Although social

Figure 1. Shows the structure of social networks with nodes

networking is possible directly within the different interest groups at universities, workplaces and associations of citizens today are the most popular social networks based on Internet. Such networks generally use the web portal through which users interact. Each member of the community creates its profile, and thus becomes a “node” in the network. Such networking is a highly interactive, dynamic and practically in real time with minimal financial investment, as opposed to direct networking which organization of physical infrastructure requires significant funds. Besides the benefits of networking websites are also a possibility for wide international presence, open access with the possibility of profiling specific groups according to the needs and demands of these groups. Big internet (virtual) networks often have a certain major focus of interest, however, there are specialized networks for certain areas. Large global networks are generally designed for non professional users, but within them can be created semi-professional groups. In case of specialized networks information or support groups provide professionals, and users can be either professionals or non professional. In such networks can be found certain interest in health issues, both global and specialized web networks. (Figure 1.)

Following the previous statements the social networks can be divided into several groups, depending on connection methods, field of operations or expertise of those who participate in specific networks:

- Social networks with personal physical connectivity (the citizens' associations, transplant networks, etc.),
- Global Internet social networks (Facebook, Twitter, Skype)
- Specific internet health related social network (forums, Health Care Forums, Healthcare Industry Forum)
- Medical social internet network for non professionals (DailyStrength, CaringBridge, CarePages, MyFamilyHealth)
- Scientific internet social network (BiomedExperts, ResearchGate, iMedExchange)
- Social internet networks supported by professionals (HealthBoards, Spas and Hope Association of Disabled and diabetic Enurgi).
- Scientific networks in the world's biomedical literature databases (Current Contents, ISI Web knowl-

edge, PubMed/Medline, Excerpta Medica/EMBASE, EBSCO, Index Copernicus, etc.).

Each of these networks has a specific mode of action on the development of health care. Their essence is that they allow improvement of information flow to health care users and health professionals. Also, in some cases, users of health care can also get financial support in furtherance of the health services. Some social networks shared the surviving experiences in relation to that advice, the other recommends accommodation in hospitals, or treatments, some contain educational articles for patients, promoting a healthy lifestyle and recommend preventive programs. Some social networks help their members find the most appropriate therapist or to obtain an adequate medicine. In the social networks that are supported by professionals, can be found professional advices and answers to user questions. In purely professional networks are searched partners for specific research, assistance in the implementation of specific projects or simply expert advice. Unfortunately, they often abuse the global social network to advertise or sell drugs or procedures of dubious quality, and so can harm the uncritical users. Therefore, we can talk about user safety and quality of information in certain types of social networks.

2. ASSOCIATIONS OF CITIZENS

Citizens' association as a social network is a specific form of organization of citizens whose purpose is to satisfy some of their needs, expressions of interest or initiative for involvement in various spheres of social and other activities. Very frequent are associations of citizens suffering from some diseases, such as for example the Association for Support of HIV/AIDS patients “APOHA” with central headquarters in Sarajevo and VCCT centers in almost all major towns in B&H. In these centers can be done voluntary confidential HIV testing in conjunction with counseling. In addition, sometimes it offers financial assistance to the members of the association. By advices, testing and other specific support associations improves health status of populations for which they are organized. Association may be organized for specific age population groups such as associations “Heart for children with cancer in the Federation B&H” The association was founded in Sarajevo 2003 by the joint efforts of parents and friends of children suffering

Figure 2 Home APOHA Web site, social network for AIDS in BiH

from cancer and the Association “Ein Herz kribbskrank fir Kanner” (“Heart for children with cancer”) from Luxembourg. (Figure 2.

The Association has more than 80 members from the whole territory of the Federation of Bosnia and Herzegovina. The aim of the association is working towards a better understanding within the society when it comes to treating children with cancer, creating better conditions for treatment, re-socialization of children and parents, public education, coordination with government representatives on issues of treatment beyond the borders of our country, cooperation with similar associations from around the world. Also, members of the Association has been organizing lectures for parents, children and the public on various issues, humanitarian activities in order to raise money for treatment, and work on establishing contacts with potential donors. This is especially important when there is a need for provision of expensive medical treatment outside the borders of Bosnia and Herzegovina, for which health insurance funds do not have adequate resources. This association also creates better conditions for the treatment of children in our hospitals.

These social networks are often non-governmental organizations, but rarely can be organized networks of governmental institutions, such as a national transplant network or the Eurotransplant network. As they have the support of professional organizations in healthcare, information disseminated is reliable.

3. GLOBAL INTERNET SOCIAL NETWORKS

Facebook, Twitter, MySpace and Flickr are for sure four most famous and most popular social networks. (Figure 3). New networks continue to form, although at the web market there are already too many. Twitter has been accessed 50,000 times per day and has over 200 million users. In January 2011, Facebook had 600 million users who belong to the unique cyber culture. Social networking today is what the internet was 20 years ago. Public social networks based on Internet enabling communication, collaboration and information gathering in the field of health care. More than half (55%) of Americans who investigate health prob-

lems on the internet get the information about the therapy or condition via the Internet, and one third are using social networks. About 60% of doctors in U.S. use social networks for professional purposes (3,4). Using social networks in the health sector enables:

- Increase in communication and cooperation, where patients exchange information about similar problems, and professionals can share experiences on care or treatment. As a result, make better health decisions.
- Patients can provide feedback about the disease and treatment to their doctors and they can easily find out about treatment options of such patients in different health centers. Such feedback can affect the referral of patients to other levels of health care or other vital processes in decision making.
- Global Internet social networks enable the exchange of information without time and space limitations. This increases the number of potential users of health services.
- Social networking can be used in promoting, enhancing work ability and knowledge of stakeholders.

Within these global social networks enabled by the philosophy of Web 2.0 (5) it is possible to form a narrow interest group. So let's say searching Facebook by keyword "breast cancer" in November 2008 could be found 620 groups with 1,090,397 members who share information on the topic of breast cancer. The vast majority of these groups was established to raise funds for treatment (44.7%), one also a large part, to promote awareness of the problem (38.1%), and many have been promoted by the foundation established to support patients (61.9%) with breast cancer (6). Searching by the same methodology, the key words "heart disease Bosnia and Herzegovina" in April 2011 was found on Facebook 4 groups with 3421 articles. Groups are only open in order to gather support for treatment. Quality, reliability and relevance of data obtained through the exchange by these global networks are questionable. These are open-access network, where information is given indiscriminately, and as such it should be perceived. Rarely a group is assigned to an administrator as a censor for filtering data. These censors are more likely to be found on forums and social network created for specific purposes. But even there the administrators do not have qualifying profile for a particular area, and we may doubt their valid assessment of data.

4. SPECIFIC INTERNET HEALTH SOCIAL NETWORKS

Searching the internet for specific health topics, we can find a variety of interactive web pages that require specific identification and setting up the profile of participants to be able to discuss the proposed topics. Participants have the option of creating new themes. Forums often contain non-critical and unverified data and information, although in some forums, such as the Health Care Forums, for particular topics are assigned moderators. This forum covers various areas of health, such as health insurance, doctors, care, nutrition, alternative medicine, and many others. In early May 2011 at this network were available 138,902 articles and 52,353 registered participants. Forums may

Figure 3 Logos of various social networking websites

Figure 4. Showing the network of experts who have worked in collaboration with Prof. Masic to BioMedExpert social network

be opened within various portals. Portal topix.com is the leading news community on the Web, connecting people with information and discussions on various topics. The network has created artificial intelligence algorithms that for the 24 hours a day follow the latest news from the approximately 50,000 sources, creating more than 360,000 pages with news. As the users wanted to comment on news portals happened to be choking with e-mails and in 2005 the forum is installed. Thus is created an information board with millions of people who have until May 2011 made 140 million comments, adding more than 100,000 comments a day. One of the forums on this website is the Healthcare Industry Forum with the 12,074 topics by May 2011. The themes are different from the comments of various pharmacological effects, the procedures and other health technologies. Searching by keyword H1N1 were found 33 topics with 289 posts during the period from May 2009 until April 2010. Comments were generally uncritical, so that the information obtained through such networks is unverified. The importance of such information is that it held public attention for the problem and that they cannot instruct the user how to solve problems.

5. HEALTH SOCIAL NON PROFESSIONAL INTERNET NETWORKS

These networks are usually created from charitable non-profit organization offering free personalized Web sites to people who are facing serious health problems, whether they are hospitalized or recovering from illness or accident. This service allows family members and friends to get consistent information through the website. Visitors, who log on to the patient's personal site, can leave a message of support or encouragement. Such a network is CaringBridge which is established in 1997. The community includes artists, visitors and donors from more than 225 countries and territories worldwide. Each day is visited by half million people, and until now there were more than 1 billion visits to personal pages. This network is similar to DailyStrength which is a social network where users give each other emotional support by discussing their struggles and successes. There are more than 500 support groups with

a variety of topics such as depression, divorce, parenthood, cancer ... The network provides continuous support and is always someone as a resort for conversation.

6. SCIENTIFIC SOCIAL INTERNET NETWORK

These social networks allow scientists and researchers to collaborate and exchange information and data. The best known such a network is BioMedExperts. It contains profiles of over 1.8 million biomedical experts from more than 190 countries around the world. Their profiles are automatically generated by assigning terms from articles that were published in the relevant biomedical literature. These data were extracted from over 18 million scientific papers and 20,000 journals. The network so far has 24 million ports in various combinations. (Figure 4.)

ResearchGate is also a social network intended for collaboration of researchers from all scientific disciplines. Members can create their own blog within the network. The network has the possibility of semantic search, information exchange, discussion, to create forums, groups, etc. There are over 900,000 members from 196 countries around the world.

Figure 5. Home page Web site Health Board

Information and data obtained through these types of social networks are scientifically based and very reliable. They have great value for the health service.

7. SOCIAL INTERNET NETWORKS SUPPORTED BY PROFESSIONALS

Dealing with health problems is always difficult. Connection with others who are going through the same situation gives the power of community. Social network HealthBoards provides unique support for such relationships with more than 224 communities covering different areas of health, diseases and conditions. Through a partnership with a professional portal, WebMD provides a professional customer support. The community has about 730,000 members, with 767,886 topics and processed 4,418,155 comments until May 2011. During one month it is visited by more than 6 million visitors. (Figure 5).

Enurgi is similar social network. With a database of over 1.5 million licensed health care workers makes a revolutionary web-based health service where patients, family members and health workers independently manage the

process of care through the Internet. Provides support to older people by enabling them to have online connection with their required health worker.

Such social networks provide valuable medical information that can significantly improve the health service.

Social networking is a concept present for a long time, but the explosion of the Internet, information technology and Web 2.0 philosophy (7), social networking has become halate to connect people and facilitate their communication in a way that was previously impossible (8). Information is exchanged in real time and in a way not possible in real life communities. This allows participants to engage in many activities in their home such as shopping, information search... They also have access to thousands of specific discussion groups that are created for specific health topics, nutrition, drugs, procedures... Virtual communities provide an ideal medium for such relations, because information is easily released with a short response time. All this gives users a sense of belonging, which can give and receive support in a very simple, quick and inexpensive way. Economic virtual communities can be very successful because they offer the advantage of disintermediation in commercial transactions, thereby eliminating the distributor and customers and suppliers come directly into contact (9).

On the other hand, the current rapid information provided risk of inaccuracy because we cannot see their validity. It is difficult to choose a reliable source because there is no editor who will review each comment and provide some level of accuracy and quality of information. The identity of the commentators can be anonymous and therefore even more unreliable. Depending on the type of social networks should be approached cautiously to information. In most social networks access to free information can lead to threats of legal and ethical norms which are subject to health information (10). As professional social networks often contain confidential information may be the target of attacks by hackers, trojans or viruses. It can steal a user's identity and cause considerable damage. These are all questions that should be taken into account in the future.

It should be mentioned that networks are becoming a key element of social structuring, and it are subordinates all from the capitalists to ordinary workers, health professionals and patients. New world revolution called the information revolution has led to fact that technologies, are not any more the tools in the hands of the powerful, but they have become so powerful that govern the previous powers. So the "Matrix" is no longer a science fiction, it is all around us, specifying the key dimensions of our lives (11).

8. SCIENTIFIC MEDICAL INTERNET NETWORKS-HOSTS OF MEDICAL SCIENTIFIC INFORMATION

In the early nineties of the last century the Association for Education and Training in the field of ICT promotes more intensive use of these technologies in all spheres and at all levels of medical education in order to improve the quality of medical education. Special emphasis is given on the introduction of new methods of education via the Internet-Distance Learning, Web based medical education,

Figure 6 Logo scientific social network EBESCO

CAI, CAL, etc. The second aspect is related to more intensive use of the system of biomedical and technical information and computer hosts for major biomedical literature in computer databases: Current Contents, ISI wen Knowledge, PubMed/Medline, Excerpta Medica/EMBASE, EBSCO, Index Copernicus, and others in which articles are stored in the form of secondary indexed publications—abstracts or full versions of articles published in HTML or PDF version from the primary scientific journals. These hosts are a very important source of scientific and technical medical information that is regularly stored in the database of medical journals, some of which are published once a week, every fifteen days, monthly, every two months or quarterly. Most journals now indexed in these databases have their own web site, where besides the content of published papers, there are other important information that may be of use to scientists and researchers, and very often ordinary people, who are from various motives, curiosity or general information about own health problems searching this database. In these databases can be found articles published in thousands of indexed journals from all over the world (Medline has close to 5000 and EBSCO about 10000 biomedical journals in their databases) (12). (Figure 6).

9. CONCLUSION

Social networks today have a very significant impact on health promotion and allow millions of users fast, easy and concise access to the most important and useful medical information. Unfortunately, these sources of information with their actors and protagonists who are in the system of social networks is sometimes indiscriminate and inaccurate, for as yet there are no strictly defined rules and codes, which often leads to improper use or misuse of these networks by individuals or groups. The situation is different when it comes to computer database hosts of biomedical literature, which are under the strict supervision of experts and scientists who control the level of published scientific papers in indexed journals from which in the form of summaries or PDF format in extenso publications are stored in the database of biomedical science literature.

Conflict of interest: none declared.

REFERENCES

1. Thomas W. Valente. Social Networks and Health. Models, Methods, and Applications. Copyright © 2010 by Oxford University Press, Inc.
2. Bernice A. Pescosolido and Judith A. Levy. The role of social networks in health, illness, disease and healing: the accepting present, the forgotten past, and the dangerous potential for a complacent future. in Judith A. Levy Social Networks and Health. Emerald Group Publishing Limited 2002.
3. Paul H. Keckley, Michelle Hoffmann. Social Networks in Health Care: Communication, collaboration and insights. Copyright © 2010 Deloitte Development LLC. All rights reserved.
4. Kuehn BM. Patients go online seeking support, practical advice on health conditions. JAMA. 2011 Apr 27;305(16):1644-5.
5. Carl Timm. Seven Deadliest Social Network Attacks. Syn-gress © 2010 Elsevier Inc.
6. Bender JL, Jimenez-Marroquin MC, Jadad AR. Seeking support on facebook: a content analysis of breast cancer groups. J Med Internet Res. 2011 Feb 4;13(1):e16.
7. Fernandez-Luque L, Karlsen R, Krogstad T, Burkow TM, Vognild LK. Personalized health applications in the Web 2.0: the emergence of a new approach. Conf Proc IEEE Eng Med Biol Soc. 2010;2010:1053-6.
8. Borko Furth. Handbook of social network technologies and applications. © Springer Science+Business Media, LLC 2010.
9. Galloro V. Status update. Hospitals are finding ways to use the social media revolution to raise money, engage patients and connect with their communities. Mod Healthc. 2011 Mar 14;41(11):6-7, 16, 1.
10. Thompson LA, Black E, Duff WP, Paradise Black N, Saliba H, Dawson K. Protected health information on social networking sites: ethical and legal considerations. J Med Internet Res. 2011 Jan 19;13(1):e8.
11. Dalibor Petrović. From Social Networks to Network Society: A Review of the Macro Network Approach in Sociology. Sociologija, Vol. XLIX (2007), N° 2:161-182.
12. Masic I, Ridjanovic Z, Pandza H, Masic Z. Medical informatics. Avicena, 2010: 351-384.

EFMI European Federation for Medical Informatics

Add to Favorites!
<http://www.efmi.org>

 Change Font Size!
[\[A+\]](#) [\[A-\]](#) [\[Reset\]](#)

Home

MAIN MENU

Home

All News/News Archive

Search EFMI News

About EFMI

Board Members

Council Members

Downloads

Bookmarks/Links

Contact Us

EFMI COUNTRIES

- Austria
- Belgium
- Bosnia-Herzegovina
- Croatia
- Cyprus
- Czech Republic
- Denmark
- Finland
- France
- Germany
- Greece
- Hungary
- Iceland
- Ireland
- Israel
- Italy
- Moldova, Republic of
- Netherlands
- Norway
- Poland

STC2012 Publications

Monday, 06 February 2012

"Doctor and Information Technologies" publishes articles on Health Information and the creation of a unified information space. Submissions of the STC2012 will be published in it mainly in English language, some in Russian language.

Topics of the Journal are: complete computerization of medical facilities, medical registers, statistics, geographic information systems, telemedicine, legal framework and software protection of health information, electronic documents (electronic medical history, hospital e-passport), the legal basis of the use of digital signatures, computer system of compulsory and voluntary health insurance, the compatibility of computer programs, development of common classifications and guides, features and advantages of distance learning medical, legal protection of computer programs and databases as intellectual property, the use of handheld computers in medical practice, medical resources on the Internet.

More information at Publisher "Health Manager" <http://www.idmz.ru/>

and

Large projects in eHealth <http://www.STC2012.eu/>

Open Source for Quality Health Care

Wednesday, 25 January 2012

The seminar "Open Source Solutions for more Quality in Health Care" at STC2012 will provide an overview on open source software, open resources and solutions in health care. It is planned to take part on 18 April 2012 also as part of the MedSoft fair (<http://www.armit.ru/medsoft/2012/>).

Beside a general introduction it will present major, well-established software projects and summarise existing initiatives to support and promote its use. Natural to the characteristics of

STC2012 MOSCOW

EFMI STC2012 Moscow
 Welcome to the 11 International Special Topic Conference of the European Federation for Medical Informatics in Moscow, Russian Federation 18-21 April 2012
 Conference theme:
Large Scale Projects in eHealth Partnership for Modernisation
 STC2012

MIE2012 PISA

MIE 2012
 PISA - ITALY
 26 - 28 AUGUST
www.mie2012.it