



Breast self-examination web site of the Institute of Oncology Sremska Kamenica vs. breast self-examination web sites in English language and languages of former Yugoslavia

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Breast self-examination web site of the Institute of Oncology Sremska Kamenica was designed in 2000 year and since then it has had about 490 visits, i.e. one visit by day approximately. The site was presented at the 6th Annual World Congress on the Internet in Medicine "Mednet 2001" in Udine, Italy, from November 29 to December 2, 2001. The next phase in our project is to improve its contents to increase its popularity. To achieve this we compared our site with similar sites in English language and languages of former Yugoslavia. The results of this comparison are presented in this paper. To find the sites in all languages we used search engine Google.com and following key words: "breast self-examination" (English language), "samopregled dojke" (Serbian and Croatian languages), "Samopregledovanje dojki" (Slovenian language) and "Samopregledot na dojkata" (Macedonian language). Some additional aspects of breast self-examination such as its validity as a screening tool and its influence on breast cancer mortality were also involved. Our aim was to emphasize the importance of further development of telemedicine services in general, and particularly the importance of primary care and early detection, including breast self-examination as integral parts of teleoncology services.

KEY WORDS: Breast Self-Examination; Breast Neoplasms; Telemedicine; Internet

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INTRODUCTION

Breast self-examination (BSE), as a web site, is one of telemedicine services. Telemedicine represents the usage of electronic information and communicational technologies in providing and giving help in health protection when the participants are physically separated (1). Telemedicine represents the means of giving health protection to patients regardless of their geographic location, costs, or travel limitations, combining communication technologies with the knowledge of medical experts. American telemedicine association gives the similar definition of telemedicine: telemedicine is the use of medical information exchanged from one site to another via electronic communications for the health and education of the patient or healthcare provider and for the purpose of improving patient care (2). According to this definition of telemedicine, all services (phone

consultations, video-conference, video-consultations, telemonitoring, teleradiology, telepathology, telesurgery, distance learning, remote approach to medical databases, etc) can be seen as a wide range of telemedicine services (3). There is actually three ways of grouping various telemedicine services. One way is to group them according to their implementation in fields of medicine: teleradiology, telepathology, telesurgery, teledermatology, teleneurology, teleoncology, etc. The other way is to use technology methods such as video-conferencing, telemonitoring, teleconsultations (exchange of medical data and pictures both for diagnostics and treatment), telecare, teleeducation, etc. Perhaps the best grouping for better understanding of telemedicine is one made on all implemented service in medicine today with their common names: telepathology, teleradiology, video-conferencing, teleeducation, telemonitoring, telecare. These groupings should be considered only as a way for better understanding telemedicine, certainly not as a definition. Hence, BSE belongs to teleoncology services and teleeducation as it gives new information as well (4).

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MATERIALS AND METHODS

Breast self-examination web site of the Institute of Oncology

Sremska Kamenica was designed in 2000 year and since then it has had about 490 visits, i.e. one visit by day approximately. It is based on a brochure made by the Institute of Oncology Sremska Kamenica in 1991, for program “Early detection of breast cancer”, based on “Kentucky cancer program”. The editor of this brochure was Prof. Branimir Guduric. Unfortunately, there was no money for further publishing of this brochure because of general poverty of the country and society, so a decision was made to design Internet web site Breast self-examination, as a much cheaper solution. The web address is <http://www.onk.ns.ac.yu/Prevention4.htm>.

Besides its good points such as cheap, fast and easy way to collect needed information, this solution has some limitations: a small number of potential consumers, because Internet is not wide accepted among people - personal computer is too expensive for common citizens, and cultural and educational limitations based on low level of education of the citizens in Yugoslavia in general. Therefore, in designing the BSE web site, we had to keep in mind all mentioned facts in order to create an effective tool for education, and made a concept which was based on several geographical, epidemiological, social and cultural facts:

- We focused on the region of Vojvodina (the population of Vojvodina is about 2 million of citizens).
- Breast cancer is the most frequent localization among women in the Province of Vojvodina.
- Two biggest urban areas (Novi Sad and Subotica) have one of the highest rates of incidence (79.5-88.0) (source: Register of malignant neoplasms of the Province of Vojvodina; color maps of incidence and mortality rates in Vojvodina are shown in Figures 1a and 1b).
- The number of people well informed about cancer is small, even in more developed countries than Yugoslavia is.

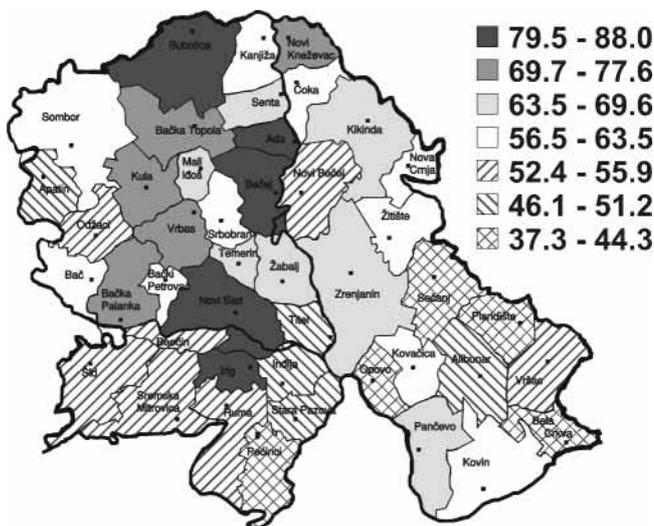


Figure 1a. Incidence rates of breast cancer in Vojvodina, Women

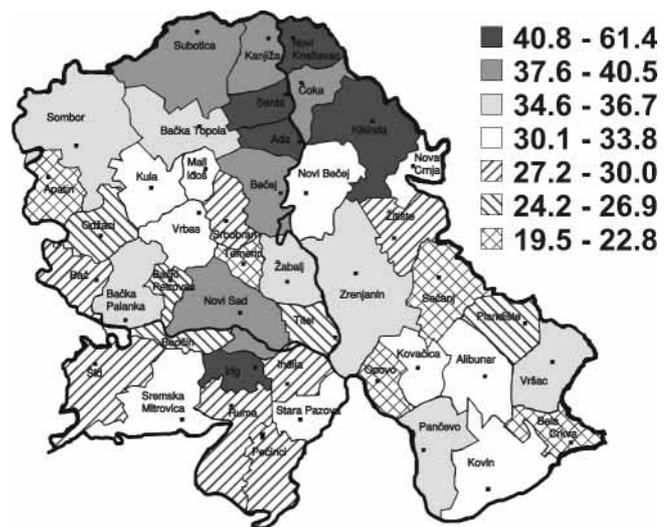


Figure 1b. Mortality rates of breast cancer in Vojvodina, Women

· Better education of female population would help prevention and early detection of breast cancer.

· Primary care is the basis for effective treatment of breast cancer (5). Keeping in mind these facts, we had to define our target population for education about breast cancer and BSE. According to public information of Internet users in Vojvodina, about 2 percent of population are using web services of Internet every day, which means approximately 40,000 families, i.e. 40,000 women. This number should be considered as estimation, because it is hard to get real number of Internet users from 6 main Internet providers in Vojvodina. The Province of Vojvodina is the most developed part of the country with the highest level of education, so Internet can be afforded by a wide group of population. This leads us to conclude that the target population is 40,000 women. That number of potential users justifies the creation of this web site and its possible benefits (5).

After one year and half of using the site, it was presented at the 6th Annual World Congress on the Internet in Medicine “Mednet 2001” in Udine, Italy, from November 29 to December 2, 2001. This site was successful enough to make us start the next phase in our project - to improve its contents and to increase its popularity by its comparison with similar sites in English language and languages of former Yugoslavia.

The search engine used for finding BSE sites was Google.com because of its high rank among search engines on the Internet. Two groups of languages were chosen: one was English as the main language on the Internet and the other were languages of former Yugoslavia, as the closest languages to Serbian, both in lexical and geographical aspect. Here, we limited our choice to only the sites from the countries where English is official language, with one exception in case of the Republic of Ireland because English is practically semi-official language there. In choosing the sites offered by Google.com we defined the rule to

accept only the first 50 sites, using the fact that first shown sites matches the most to entered key words on Google.com search engine. To find BSE sites we used following key words: "breast self-examination" (English language), "samopregled dojke" (Serbian and Croatian languages), "Samopregledovanje dojke" (Slovenian language) and "Samopregledot na dojkata" (Macedonian language).

Our BSE web site consists of seven general parts. These are: Breast self-examination in six phases; Facts of breast cancer presented in a form of 6 questions and 6 answers; Information about which groups of women are the most endangered with breast cancer (risk groups of women); Recommendations on how to live healthier; The most important symptoms of breast cancer with instructions in which cases it is necessary to visit doctor at once; E-mail communication with doctors in our Institute and the 7 most important symptoms of cancer in general. The home page of our web site is shown in Figure 2.



Figure 2. Home page of BSE site of the Institute of Oncology Sremska Kamenica

RESULTS

According to the criteria for choosing the sites from Google.com search engine, we made the list of twenty-four BSE sites for comparison (other sites are not concerning BSE directly, or they are a part of already accepted sites). The list is shown in Table 1.

The overall number of found sites was 18,600 sites in English language, 22 sites in Serbian and Croatian languages, 12 sites in Slovenian language and 1 in Macedonian language.

Analyzing the contents of examined sites and using suggestions given during "Mednet 2001" in Udine, Italy, the following attributes for comparison were defined:

- Importance of early detection
- Risk factors
- W-H-W instructions (What to look for-How to do it-What to do if

something is found),

- Additional information (nutrition information, statistical and epidemiological data, recommendations how to live healthier, links to related web sites, etc)
- Contact
- Feedback,
- Diagnostic information,
- Treatment information.

The last column in the table is subjective scale which ranks the

Table 1. List of BSE sites chosen from Google.com search engine in English language and languages of former Yugoslavia

English language	
United States of America	
Site 1	http://www.soyouwanna.com/site/syws/breast/breast.html
Site 2	http://www.med.umich.edu/1libr/cancer/breast05.htm
Site 3	http://obgyn.uihc.uiowa.edu/Patinfo/Adhealth/breastexam.html
Site 4	http://www.md-phc.com/breast/breast.html
Site 5	http://www.mskcc.org/mskcc/html/621.cfm
Site 6	http://www.umc.sunysb.edu/baldwin/selfexam.htm
Site 7	http://www.cs.wayne.edu/~faf/care/prev/bse.html
Site 8	http://breastdoctor.com/breast/exam.htm
Site 9	http://www.surgery.wisc.edu/wolberg/br_exam.html
Site 10	http://www.plannedparenthood.org/WOMENSHEALTH/breastcancer.htm
Site 11	http://www.wehealny.org/directory/combsite/folup.html
Site 12	http://www.mckinley.uiuc.edu/Handouts/breastex/breastex.html
Canada	
Site 13	http://www.breastcancerinfo.com/bhealth/html/how_to_perform_a_bse.html
Site 14	http://www.infobreastcancer.cyberus.ca/bse2.htm
Site 15	http://mystic.biomed.mcgill.ca/~zsuzsi/HTML/BSE.html
United Kingdom (Great Britain)	
Site 16	http://hosted.aware.easynet.co.uk/info/bse.htm
Republic of Ireland	
Site 17	http://www.eurohealth.ie/cancom/bse1.htm
Australia	
Site 18	http://www.tased.edu.au/tasonline/twhn/bsexam.htm
Site 19	http://www.abc.net.au/health/minutes/stories/s322233.htm
Languages of former Yugoslavia	
Croatia	
Site 20	http://www.plivazdravlje.hr/?section=stanja
Yugoslavia	
Site 21	http://www.yucancerfound.org.yu/tekst/dojka.html
Slovenia	
Site 22	http://www.onko-i.si/Slo/bolezni-dojke/BD5A.htm
Site 23	http://www2.mf.uni-lj.si/~zdcerk/Dojke.htm
Macedonia	
Site 24	http://www.soros.org.mk/mcr2000/Kondov.doc

estimation of understanding the content by an average consumer, the way of presenting the facts and the level of multimedia explanation of BSE (text only, text and picture or full multimedia show such as video clip or audio record). The scale is between 1 and 5. According to these attributes, the results of comparison are shown in Table 2. The details of the each site are given in Table 3, while percentage of presence of defined attributes in the contents of analyzed sites are shown in Figure 3. In Table 4, useful links concerning breast cancer and BSE are given. Home pages of the analyzed sites are shown in Figure 4 (6-30).

Sites 19 and 24 could not be estimated, because they did not have any attributes used for making subjective rank (24). The reasons why these sites were included in the paper were the possibility to hear via Internet (using Real Audio®) all information which could be read on the site (Site 19), and because the Site 24

was the only site in Macedonian language concerning BSE.

Table 2. The results of comparison of BSE sites

Institution / Source	Importance of early detection	Risk factors	W-H-W instructions	Contact	Additional information	Feedback	Diagnostic information	Treatment information	Subjective rank (1-5)
<i>Institute of Oncology Sremska Kamenica*</i>	✓	✓	✓	✓	✓	✓	✓	✓	-
USA									
1. American Cancer Society; NCI	✓	✓	✓	✓	✓	✓	✓	✓	5
2. University of Michigan	✓	✗	✓	✓	✓	✓	✓	✓	4
3. University of Iowa	✓	✗	✓	✓	✓	✓	✓	✓	4
4. American Cancer Association	✓	✗	✓	✓	✓	✓	✓	✓	5
5. Memorial Sloan-Kettering Cancer Center	✓	✗	✓	✓	✓	✓	✓	✓	4
6. SUNY: Carol M. Bald-win Breast Care Center	✓	✓	✓	✓	✓	✓	✓	✓	5
7. Wayne State University	✓	✓	✓	✓	✓	✓	✓	✓	5
8. YourDoctor, Inc	✓	✓	✓	✓	✓	✓	✓	✓	5
9. UW Medical School	✓	✗	✓	✓	✓	✓	✓	✓	3
10. Planned Parenthood Federation of America, Inc.	✓	✓	✓	✓	✓	✓	✓	✓	5
11. Continuum Health Partners, Inc.	✓	✗	✓	✓	✓	✓	✓	✓	4
12. McKinley Health Center, UI	✓	✗	✓	✓	✓	✓	✓	✓	4
Canada									
13. KOMEN Foundation	✓	✓	✓	✓	✓	✓	✓	✓	5
14. Info Breast Cancer, by Stan and Carol	✓	✗	✓	✓	✓	✓	✓	✓	5
15. Zsuasi Bencsath-Makkai	✓	✗	✓	✓	✓	✓	✓	✓	5
United Kingdom									
16. Breast Cancer Campaign	✓	✓	✓	✓	✓	✓	✓	✓	5
Republic of Ireland									
17. European Institute of Women's Health	✓	✓	✓	✓	✓	✓	✓	✓	4
Australia									
18. The Tasmanian Women's Health	✓	✓	✓	✓	✓	✓	✓	✓	5
19. ABC Net	-	-	-	-	-	-	-	-	-
Croatia									
20. Pliva Company	✓	✗	✓	✓	✓	✓	✓	✓	4
Yugoslavia									
21. Yugoslav Cancer Foundation	✓	✓	✓	✓	✓	✓	✓	✓	4
Slovenia									
22. Institute of Oncology, Ljubljana	✓	✓	✓	✓	✓	✓	✓	✓	5
23. Health Center Cerknica	✓	✗	✓	✓	✓	✓	✓	✓	4
Macedonia									
24. Macedonian Society of Radiology	-	-	-	-	-	-	-	-	-

* = compared site

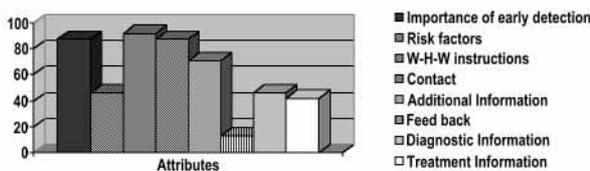


Figure 3. The percentage of presence of defined attributes.

CONCLUSION

The aim of this comparing analysis had three aspects:

- 1) Improving the contents of Institute's BSE web site and increasing its popularity,
- 2) Presenting opinion of BSE's validity as a screening tool, its influence on breast cancer mortality and other interesting facts concerning BSE,
- 3) Emphasizing the importance of further development of telemedicine services in general and particularly the importance of primary care and early detection, including breast self-examination as integral part of teleoncology services.

Using the results of comparison, three attributes are missing in

Table 3. Details of analyzed sites

	Educational/Commercial	Interesting parts	Multi-language support	Multimedia support	Category of additional information	Category of diagnostic information	Category of treatment information
Site 1	E	24 hours telephone hotline	✗	🖼️	E,H,L	B,C,M,U	✗
Site 2	E		✗	✗	L	✗	✗
Site 3	E		✗	🖼️	✗	✗	✗
Site 4	E	BSE calendar	✗	🖼️	O	✗	✗
Site 5	E		Spanish	🖼️	✗	✗	✗
Site 6	E		✗	🖼️	G,R	B,C,M,U	B,C,H,S
Site 7	E	"CARE Risk Assessment"	✗	🖼️	H,N	B,C,M,U	C,R,S
Site 8	C		✗	🖼️	A,H,L	B,C,M	B,C,N,S
Site 9	E		✗	🖼️	✗	✗	✗
Site 10	C		✗	🖼️	E,G,H	B,C,M	C,R,S
Site 11	C		✗	🖼️	E	B,C,M	✗
Site 12	E		✗	🖼️	✗	✗	✗
Site 13	E	Post-treatment care support	✗	🖼️	E,G,H,N,O	B,C,M,U	A,B,C,R,S
Site 14	C	BSE calendar	✗	🖼️	G,O	C,M,U	C,H,R,S
Site 15	?	Feed back information form	✗	🖼️	A,G,R	B,C,M	C,R,S
Site 16	E		✗	🖼️	E,G,H,O	✗	✗
Site 17	E		✗	🖼️	A,E,G	✗	✗
Site 18	E		✗	🖼️	E,G,L,O,R	✗	✗
Site 19	C		✗	🖼️	✗	✗	✗
Site 20	C		✗	🖼️	✗	B,M,U	✗
Site 21	E		✗	🖼️	E,G,O	✗	✗
Site 22	E		✗	🖼️	A,G,H,O	B,C,M,U	B,C,H,R,S
Site 23	E		✗	🖼️	✗	✗	✗
Site 24	E		✗	✗	✗	✗	✗

Multimedia support: 🖼️-Picture; 🗣️-Audio; 📺-Video; ✗-None

Additional information: A-Breast anatomy; E-Epidemiological/Statistical data; G-General breast health information; H-Healthier lifestyle information; L-Links; N-Nutrition information; O-Other; R-Research

Diagnostic information: B-Biopsy; C-Clinical breast exam; M-Mammography; U-Ultrasound
Treatment information: A-Alternative treatment; B-Breast reconstruction; C-Chemotherapy; H-Hormone therapy; N-Sentinel node surgery; R-Radiotherapy; S-Surgery

Institute's BSE web site: feedback information, diagnostic information and treatment information. Improving Institute's BSE web site with diagnostic and treatment information is important and certainly will be done, especially because the BSE provider is a health institution in which health services are given every day. The team of radiologists, surgeons, oncologists and internists will prepare the concept of diagnostic and treatment information which should include following segments: surgery, radiotherapy, chemotherapy, clinical trials, complementary/alternative treatments, then mammography, biopsy, clinical examination. However, the question of feedback information is discussible. Although we consider feedback information very useful and needed (but also hard to collect because of various reasons; two main

Table 4. Useful links

URL
http://www3.cancer.org
http://www.nci.nih.gov
http://www.tased.edu.au/tasonline/twhn/brhlth.htm
http://www.med.umich.edu/1libr/cancer/breast01.htm
http://www.med.umich.edu/1libr/womens/umpgms02.htm
http://www.med.umich.edu/1libr/cancer/breast06.htm
http://www.med.umich.edu/1libr/womens/umpgms07.htm
http://cancernet.nci.nih.gov/cancer_types/breast_cancer.shtml#genetics
http://rex.nci.nih.gov/mammog_web/pubs_posters/wyntk_breast/breast/index.htm
http://cancernet.nci.nih.gov/clinpdq/detection/Breast_Cancer_and_Mammography_Facts.html
http://www3.cancer.org/cancerinfo/main_cont.asp?st=pr&ct=5
http://www.cancercareinc.org/patients/howto.htm
http://www.tased.edu.au/tasonline/twhn/breast1.htm



Figure 4. Home pages of analyzed sites

reasons are fear of cancer and privacy matter; these reasons could explain the results in Table 2, where almost every site used for comparison do not have attribute feedback information.), we decided not to include feedback information in Institute's BSE web site so far.

Besides the three mentioned attributes, one more should be added - multi-language support, because of multi-ethnic nature

of population of Vojvodina. Over twenty-eight ethnic groups have been living in Vojvodina. Besides Serbs, the following four ethnic groups are present most: Hungarians, Slovaks, Romanians and Ukrainians. According to the experience that native language is the best language for purposes like BSE, the conclusion to enable multi-language support on the site is logical. This was also confirmed by Serbian citizens living abroad (U.S.A. and Canada) who preferred native language to English while using the Institute's BSE web site.

Analyzing the contents of sites used for the comparison, we realized that post-treatment care information found on some of the analyzed sites could improve our BSE web site. This information could be very useful and helpful for patients and their rehabilitation after treatment in social, psychological, sexual, and other aspect. This part of web site should have following sections: pain therapy, psychotherapy, physical therapy for upper extremities, treatment of lymphoedema, reconstructive surgery and using of prostheses and other information which could help to live better with breast cancer. The Institute's BSE web site will be updated with the post-treatment information in next phase of developing, but depending on the popularity of the Institute's BSE web site. The improving of the site without working on increasing its popularity is not rational. Two activities that must come one after another to serve their basic purpose are: To educate women about breast cancer (well informed women are likely to care more about their health and they are easy to be influenced to participate in the primary care policy), and to make life easier to the patients with breast cancer in post-treatment care. The activities for increasing popularity are various: promotion of Institute's BSE web site in program of Association for cancer prevention and treatment (Association for struggle against cancer); the use of local and regional television stations, radio programs, daily newspapers and popular family journals for presenting the web site; organization of promotional meetings at schools and universities for students. These actions must be coordinated among all participants in order to reduce costs.

In order to offer some additional information about BSE, we analyzed the papers found on web site of National Library of Medicine (NLM) (<http://www.ncbi.nlm.nih.gov:80/entrez/>) using keyword "breast self-examination". BSE could be concerned as well-elaborated topic with 1034 papers found in database of NLM. These additional information could be grouped as following: value of BSE as effective screening tool for breast cancer; interconnections of BSE, CBE (Clinical breast-examination) and mammography; the importance of teaching BSE to teenagers and general conclusion of performing BSE.

Value of BSE as effective screening tool for breast cancer is discussible. There are various, almost opposite opinions: Canadian

Task Force on Preventive Health Care (organization founded by Canadian Ministry of Health) has stated that BSE is not recommended as screening tool because it has not been shown to improve breast cancer mortality, but increase the number of physician visits for the evaluation of benign breast lesions and the rate of benign biopsy results (31); other authors have the completely opposite opinion that BSE contributes to reduction in mortality (32); in the paper from Russian Federation, there is statement that BSE could be used as a method of screening for breast cancer (33). But, although rich and developed countries do not recommend BSE as screening tool for breast cancer, they still think that health policy that encourages women to exam their breasts is needed and recommended (for example U.S.A., Great Britain and Canada)(34).

There are various opinions concerning interconnections of BSE, CBE and mammography. In one paper, the authors have given an opinion that mammography screening is a profit-driven technology posing risks compounded by unreliability and CBE by a trained health professional, together with monthly BSE is safe, at least as effective and low in cost (35). The other one, however, has stated that CBE is not acceptable alternative to mammography (36). And finally, as the third opinion, there is an article in which the authors question whether the mammography adds any benefit to a thorough CBE; they answered that cancer detection rates were slightly higher in group of women who did mammography vs. group of women who did CBE only (37).

Regardless of the question of benefit, teaching BSE to teenagers has showed that teaching BSE procedure has influenced positive behaviors in health care and could change beliefs, knowledge and procedure of breast examination and breast care in adolescent girls (38).

After all, what general conclusion about BSE could be? Women younger than 40, with no family history of breast cancer, should perform BSE without a doubt of its benefit! But there are several recommendations which must be obeyed: women have to be sure that they do it in proper way; besides BSE, women must not forget that CBE done by health professional at least once a year is also needed; BSE can be useful in detecting lumps between mammograms (34, 39). Nevertheless, women are those who find the most changes on their breasts.

Breast self-examination as an integral part of teleoncology services, and in generally, telemedicine services, could give a breakthrough in development of telemedicine, because of its benefit in the primary care policy, early detection and prevention of breast cancer. If women get used to take care of their health via web site, to educate themselves how to live healthier and to reduce risk of genesis of cancer that could be an initial step for understanding the importance of telemedicine and to focus on its development.

Instead of final conclusion

Up to 2005, it is expected that the number of Internet users will be at least doubled (average Internet users use Internet at least once in two weeks), which means that about 40% of urban population and 20% of rural population (optimistic expectation) will become part of Internet society. The year of 2005 should be the beginning of the period of significant development of telecommunication infrastructure as Internet backbone. In the meantime, we must not be idle, but do everything we can to be well prepared for coming period.

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