

BENEFITS AND LIMITATIONS OF E-LEARNING IN CANCER PREVENTION

DOMETI I OGRANIČENJA E-LEARNINGA U PREVENCIJI KARCINOMA

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Abstract

Based on the data of the IARC, throughout the world app. 1 115 000 new breast cancer cases are registered. In Europe breast cancer is the most common cancer in female population (app. 350 000 new cases and 130 000 deaths each year).

The permanent education of all healthcare providers in breast cancer prevention remains an important issue in breast cancer prevention. There are numerous aspects of distance learning in breast cancer prevention: from basic lectures concerning cancer to postgraduate studies in medical oncology, including different models of distance learning and e-learning.

In this paper we focused on Web Based Training (WBT) and open platforms for e-learning in this field of education. Apart from the education of the healthcare providers involved in breast cancer prevention, we also focused on different solutions applied in e-learning for the education of healthy female population in different age groups.

Few countries in the Balkans have policies for early detection of breast cancer. The development of policies for breast cancer prevention should be regarded as a high priority issue.

Epidemiology of Breast Cancer

Based on the data of the [J. IARC, Ferlay, 2004., 234] [1], throughout the world app. 1 115 000 new breast cancer cases are registered. In Europe, breast cancer is the most common cancer in female population (app. 350 000 new cases and 130 000 deaths each year) [P. Mantellini, 2005., 68] [2]. Mantellini points to the fact that breast cancer is the most common female neoplasm in both developing and developed countries.

In Serbia, breast cancer is the most frequently registered cancer in female population with app. 3700 new cases being registered each year. Breast cancer is the leading cause of death among cancers in female population. Every year app. 1300 women die of breast cancer in Serbia. There is a constant increase both in incidence and mortality rates. [A. J. Bekić, 2005., 21] [3] Incidence and mortality rates in Serbia are similar to those in the region: standardized incidence rate (per 100 000 women) equals 56 in Serbia, 59 in Slovenia, 62

Sažetak

Prema podacima IARC-a, u svijetu je zabilježeno oko 1,115,000 novih slučajeva karcinoma dojke. U Europi, karcinom dojke je najčešći oblik karcinoma među ženama (svake godine bilježi se oko 350,000 novih slučajeva, a 130,000 slučajeva godišnje završava smrću). Kontinuirana edukacija medicinskog osoblja i osoba zaposlenih u zdravstvenim ustanovama važan je čimbenik u kontekstu prevencije karcinoma dojke. Postoji više aspekata učenja na daljinu kada govorimo o sprečavanju karcinoma dojke, od osnovnih predavanja o karcinomu do poslijediplomskih studija onkologije, koji uključuju različite modele učenja na daljinu i učenja putem Interneta. Ovaj rad bavi se učenjem uz pomoć interaktivnih web sadržaja (WBT - Web Based Training) i otvorenim platformama za učenje putem Interneta s ciljem stjecanja znanja iz ovoga područja.

Osim edukacijom medicinskog osoblja i osoba zaposlenih u zdravstvenim ustanovama, rad se također bavi različitim rješenjima za učenje putem Interneta koja su usmjerena na edukaciju zdrave ženske populacije različitih dobnih skupina. Nekoliko zemalja na Balkanu razvilo je programe ranog otkrivanja karcinoma dojke. Razvoju ovakvih programa za prevenciju karcinoma dojke trebalo bi dodijeliti visoki prioritet.

in Croatia and 52 in Greece. [1] Standardized mortality rate in Serbia increased 2.4 times during the last three decades from 8.3 in 1970 to 19.7 in 2000. [3]

Prevention is defined as the decrease of the risk of development of a pathological process, illness, injury, or other health damaging processes, states or phenomena. Based on the definition of prevention by [www.med.bg.ac.yu] [4] Cancer prevention is a dynamic field, based on three levels: primary prevention – prevention of the disease before it has been able to occur (risk removal), secondary prevention – the early detection of a disease while it is still curable (screening) and tertiary prevention – the limiting of the disease sequelae. [M. Rosselli del Turco, 2005., 17] [5] In this paper we focused on the importance the secondary prevention: early detection and screening of breast carcinoma. The policies and programmes for early detection of breast carcinoma aim at detection of cancer at early stages of the disease in the moment of diagnosis. This aspect of prevention includes education of healthy population,

education of healthcare providers etc. The aim of a screening test is to find whether or not a person has a disease before they show any symptoms.

E – Learning

Education means providing students with an excellent teaching and learning experience in an environment in which they can manage their programme of study according to their needs. [www.medicin.bris.ac.uk] [6] E-learning is defined as the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration. [www.elearningeuropa.info] [7] The growing of mobile and pervasive technologies, learning through simulations and open source tools are some of the trends. [7]

The application of Internet technologies (TCP/IP protocols): the educational material is available on Web Server and the students could easily download the educational material. There are different forms of learning: cooperative learning method, collaborative learning method and combined learning. The communication between the student and the teacher is done mostly asynchronously. The teacher however has the possibilities to interact and adapt to the student. The technology available for the interaction is not a guarantee that the interaction will occur.

There are four basic categories of documents that could be distributed on-line:

- Texts i.e., Word documents, Adobe Acrobat data files etc.
- From HTML to Shockwave – WEB based material,
- ‘streaming’ media Real Video, MP3 audio, NetShow,
- Courseware distributed by tools like author ware, Tool Book etc.

For the largest number of educational institutions, the first step towards E-learning is the creation of the contents available on-line, i.e., the Web page.

In order to adequately use the E-learning platform, the equivalent of the infrastructure needed for administration and management of traditional education is needed. The following components are needed:

- Process of registration: each participant has his/her own ID number – which enables the organizer to have all the activities registered,
- Safety control mechanisms: the participants have access to functions and resources suitable to their needs, which enables the organizer to control all the activities,
- The participants need to have access to the course material,
- Friendly environment – participants should be given the possibility to interact, communicate among themselves, take active part in the course and ask questions i.e., interact in the learning process,
- Grades and Tests – in order to rank the candidates,

- Curriculum and data base in order to manage the course,
- The learning process needs to be followed and administered

These pre-requisites are needed for formal education. The main advantage of the on-line distribution includes the possibility to manage the whole educational process in real time. The activities of the students could be monitored and compared in time.

The crucial issue in this matter is the creation of the system. Computer based training (CBT) includes the use of the media like video and audio records, apart from the educational material stored on a CD. Similarly to that, Instructor Lead Training (ILT) is based on direct communication, which includes the presence of at least two actors in the educational process.

Different models of e-learning are studied like: Individual learning with asynchronous communication, “Live” lectures with “on-line” exercises, On-line seminars, Interactive Virtual “Lectures” in Real Time etc. The combination of different models is available for tailor-made courses depending on the organization of the educational process.

The basic postulates of e-learning are being presented in this paper as the milestones of e-learning in general. However, in order to follow the subject – i.e., the application of e-learning in breast prevention, further explanations and details concerning e-learning are omitted in this paper.

E – Learning in Medicine: Benefits and Limitations

The challenge facing medical education through innovative approaches exploits developments in educational thinking and information and communication technologies. The idea is to actually enhance traditional teaching, not to replace it. Online scenarios can allow us to gain the appropriate knowledge before the hands-on portion of learning; replacing time spent learning theory, with more time mastering the skill.

For a number of years, simulations have played a significant role in the training activities of certain sectors. Technical barriers and the cost of development have until now prevented the widespread use of simulations as learning tools. Computer technologies, such as Macromedia Flash, have become widespread and e-learning vendors with simulation-development expertise are beginning to develop more tailor-made software solutions following the needs of the courses.

Simulations may offer advantages over handbooks or user guides. They can complement lectures, demonstrations and real world practice opportunities. Crucial supervised practice can then follow to gain essential clinical experience. Furthermore, certain areas lend themselves more easily to online teaching. Multimedia instruction is particularly well suited to

help the students acquire knowledge in specific areas in medicine, where the specific learning processes are needed involving graphic forms, movies and sounds in order to simulate the conditions in vivo.

[A. Saber, 2004 32-36] [8] points out to numerous benefits of E-learning in medicine:

- Tailor-made courses,
- Availability of the courses,
- Guaranteed consistency,
- Personalized and relevant,
- Easily updated,
- Easy tracking and reporting,
- Reduction of logistical costs (travel, space, educational materials)

Technology and cost barriers are continuing to shrink, opening thus the potential for wider adoption of simulation technology in medicine.

Letaief proposed an international project in public health, covering breast cancer in public health among other subjects. The educational project by [Letaief et al. www.universante.org] [10] gathers the experts in public health from 4 different francophone universities: Geneva, Switzerland; Beirut, Lebanon; Monastir, Tunisia and Yaoundé, Cameroun.

The goal of this educational project was to connect professors and students from different countries. The common database was created based on the knowledge gathered from undergraduate and postgraduate students tutored by three professors from different

The change of learning settings

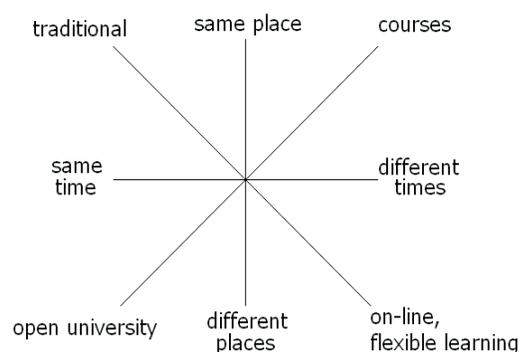


Figure 1. [Letaief, 2004, 168] [9] proposed this scheme illustrating the change of learning settings stressing some of the advantages and benefits of E-learning in Medicine like flexibility of schedules and learning process, together with the availability to gather students geographically displaced studying the same course at the same or different time

member universities. The database covers the high-priority tasks in public health: breast cancer, AIDS, cardiovascular diseases. This three-level orientated educational course covered three steps in public health: case presentation, bibliography synthesis and decision-making i.e., the development of the appropriate action



Figure 2. Four geographically displaced Universities participating in the same project – E-learning: Francophone Public Health Network www.universante.org

- intervention. Letaief, [9] stressed the advantages and benefits of E-learning in this field of public health:
- reduced the problems of accessibility of both tutors and students (time and place),
- cost reduction over the long term,
- integration of different media,
- progress monitoring,
- interaction (synchronous and asynchronous),
- group work and
- differences in the level of information and experience between developed, developing and under-developed societies.

Based on these two different experiences, limitations in E-learning in medicine however include barriers in terms of design innovation explicitly meeting the needs of the faculty i.e., the learning objectives, the need for logistic resources (PC, internet connection), relational and social aspects lacking, group motivation, financial support and sustainability in developing and under-developed countries, technical problems and lack of standards. However, widening participation, the use of xml language, more flexibility, and numerous electronic resources and printed resources as well as the integration of formative auto evaluation and E-learning quality standards need to be taken care of in future.

The standards of information and service in E-learning represent an important issue in the quality of the educational programmes offered on-line. These are addressed by the UK Government's Charter for Higher Education. The Charter is addressed in the postgraduate On-line Master Degree Programme in Oncology provided by the University of Newcastle upon Tyne. Among other important issues, the students should expect the University to provide high quality web-based learning materials developed for distance learners, written by experts and high quality web-based support materials to guide the students through the course and provide tutorial support via E-mail to give advice on the learning materials and provide regular written feedback via E-mail. In return, the students are expected to put aside adequate and sufficient time per week for studying, participate in study and discussion groups, ask questions, debate issues and help others, take part in all events which are part of the programme. [www.ncl.ac.uk/cancereducationonline] [11].

Internet is usually chosen as a web based approach for a mass media health education program. This would offer better chances for the delivery of the message. Compared to a conventional mass media campaign, the web site would cost less to develop and maintain than a mass media health education program delivered through a conventional medium such as television.

E-learning: Non-formal Education

In order to describe the relationship between health education and prevention, we need to stress the fact

that prevention and education are interconnected and overlapping to some extent, where health education serves as the basis for prevention. Prevention is then defined as the decrease of the risk of development of a pathological process. [M. Nadrljanski, 2005., 152-159] [12] In case of breast cancer, breast screening is a method of detecting breast cancer at a very early stage. Education of healthy population aims at explaining the programmes of prevention to healthy female subjects. There are numerous internet sites presented by national, regional and local cancer societies, institutes of health protection or simply health providers involved in the field. One of the examples is the site of the Canadian Cancer Society [www.cancer.ca] [13], where numerous explanations of according to different age groups.

Interactive, multi-media E-learning tool on Breast Self Exam was launched by the Thunder Bay Breast Health Coalition. [www.breasthealthnw.ca] [14] Incorporating photographs, audio and video, women can learn what to look for, how to look, stand, what to feel for and when to do Breast Self Exam and when and how often to report to their physicians. The site uses photographs, video material, interactive learning tools and an audio component so that women can listen to the instructions in both English and French. The E-learning site was designed to teach women how to do breast self exam, and increase the awareness of the early signs of breast cancer.

Another successful example of non-formal education is the action taken by the French Ministry of Solidarity, Health and Family, Assurances Maladie and the French National League against Cancer. The action « Le Rendez-Vous Santé + » [www.rendezvousantepus.net] [15] informs the female population residing in France, aged 50-74 of mammography being performed every 2 years according to French recommendations.



Figure 3. « Le Rendez-Vous Santé + » breast cancer screening promotion internet site

This unique internet site informs the healthy subjects of the advantages of the screening providing the suitable information for the population, journalists and health providers. The information concerning the action in each county is provided on-line, together with the answers to most frequently asked questions. The section for the Health Care Providers consists of epidemiological data and the results of the research supporting the mammography being appointed every two years. This aspect of the site shows that this action aims at educating Health Care Providers too.

Another aspect of the application of multimedia aims at providing the same amount of information the health subjects could get to the blind and visually impaired subjects together with the deaf and hard of hearing female residents of France.

Conclusion: The Importance of Information Distribution

E-learning was introduced to overcome the limitations of time, distance and resources. It does not and should not however replace the tutor to a physician involved in breast cancer prevention nor the advice by the experienced properly educated physician in patient education. With the epidemiological data concerning breast cancer – the aim of E-learning is expected to be education in order to prevent the disease i.e., the breast awareness and early detection of the disease.

Several e-learning technologies together with traditional methods will most likely be needed for this sort of education. A blended learning program combining E-learning and traditional learning methods can provide the convenience, speed and cost effectiveness of E-learning with the personal touch of traditional learning. The authors are fully aware of the limitations in form of technical barriers, especially concerning high-speed networks in developing countries. Other limitation represents the recognition of E-learning educational programmes in Medical Curricula in the countries facing the transitional changes of the system of education. E-Learning replaces the limitations of traditional classroom training and learners must understand that continual, lifelong learning, evidence based, clear and clinically relevant information must become part of the normal workday, also in terms of Continuous Medical Education (E-learning), although self learning has several disadvantages – learning is left entirely to the initiative of an individual and the success depends on motivational level of the learner. Remote instructor involvement or monitoring of some kind or time bound registration can bring some level of discipline required for effective learning. Social impact of peer group in learning and personal development is also lacking.

In terms of patient education, the importance should be focused on the accurate risk assessment, breast self exam and understanding of the importance of mammography campaigns in order to educate women

and convince them that it is well worth the time and minor discomfort they may experience.

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