

ICT and Its Impact upon the Globalization and Accessibility of the Education in the Health Domain

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Abstract: This paper discusses different effects of ICT on health care, in particular on health education, placing them in the context of globalization. Due to these modern technologies, the rapid transmissions of health knowledge have catalyzed achievements and opportunities, but also challenges and risks. Health care, including disease prevention and adopting a healthy lifestyle, has profited greatly by the development of ICT, advancing the best use of information and management systems for the betterment of the citizen. “Complex Integrated System for Health Education and Disease Prevention” (EDUSAN) is a complex system that has as target to achieve a modern informatics tool able to centralize in a single point a variety of web services and information classified by the user’s type. It demonstrates how ICT can improve the dissemination of health information, knowledge, comprising the users’ motivation concerning educational content and its new promoting methods.

Key-Words: Health education, ICT, Globalization, Informatics systems, Health knowledge, Dissemination

1 Introduction

Globalization and rapid technological change have made knowledge a critical determinant of competitiveness in the world. ICT promotes the acquisition and absorption of knowledge and information. Health professionals agree that ICT are of tremendous importance to the future of education in the health domain. Health is profoundly affected by the application of ICT, which change the way people can access knowledge and the way they communicate with one another in daily behaviour.

1.1 Globalization

Globalization is a process of interaction and integration among the people, companies, and governments of different nations, a process that is an inevitable phenomenon in human history that's been bringing the world closer through information, knowledge, culture and exchange of goods. This process has effects on the

environment, on culture, on political systems, on economic development and prosperity, and on human physical well-being in societies around the world. Among many forms of globalization there is information and knowledge access and sharing.

Globalization and global health draw attention to the complexity of the movement of ideas, and people through time and space and the direct and indirect impact that it is having on people’s health [1].

1.2 Health Education

Promoting good health, preventing illness and communicating about health issues are important aspects of effective health care. Increasingly, health communication is moving from a simple one-way delivery of messages to a more interactive dialogue that engages people in the issues, helps them find acceptable and appropriate solutions to health problems and

encourages people and communities to play a vital role in protecting their own health.

Information and communication technologies have been seen as new and powerful tools in efforts to improve health information dissemination.

1.3 Information and Communication Technologies (ICT)

ICT, in the globalization context, is all about global knowledge, access, participation and governance in the information age. Satellite Internet connectivity and other wireless technologies eliminate the need for telephones for dial-up access, thus Internet connectivity has expanded strongly.

Both the falling cost of computers and the explosive growth of the Internet as a communications and information resource have increased awareness of the potential for information technology to be a tool for disseminating information.

1.4 ICT and Health Education

Every nation is seeking to improve the quality of its health care and at the same time to control escalating costs. Information is seen as a key element to achieving these objectives, as is a workforce trained in the appropriate health information skills [2].

Growing evidence demonstrates that ICT can make a significant contribution to health education under the right conditions. The Internet can facilitate interaction between health professionals and health consumers manage the demand for information. From a health communication perspective, e-health applications - interactive websites providing tailored health information and other services to users - can be effective in helping people manage their own state of health, access health services, and obtain knowledge that can lead to change behaviours. This is a new field, but evaluation of early e-health applications indicates they can have significant effects on behaviour and health if they are well designed and well executed.

2 ICT and its Impact upon Globalization of Health Education

2.1 Health Knowledge, a Critical Determinant

Globalization itself was fueled by new developments in information and communication technologies. Advances in ICT, knowledge and information sharing have transformed globalization process making the world a "global village" [3].

Information is the basis of a well-functioning health system. Knowledge is the key agent for transforming both our global society and local communities. Sharing and strengthening health knowledge can be enhanced by ensuring equitable access to information for educational, scientific activities, leading to a strong public health domain of information.

ICT have clearly made an impact on health care also by improving dissemination of public health information, by facilitating collaboration and cooperation among health professionals (including sharing of learning and training approaches) and by supporting more effective health research and the dissemination and access to research findings. The flow of medical information and knowledge is shifting with increased access to the Internet, mobile phones, and data retrieval systems and that leads to adaptations in behaviour.

2.2 Achievements and Opportunities

When applied to health education, disease prevention and prophylaxis, ICT can provide considerable benefits and capabilities. Tremendous developments in health information technology have been recorded in recent years in the context of globalization. Sharing and comparing health information, increasing communication through the Internet have brought opportunities for enhancing the quality of life by increasing access of medical knowledge and for broadening the availability of quality education materials. The interactivity and global reach of ICT allows customized sharing of

knowledge, materials, and databases, quickly and cheaply over long geographic distances.

ICT can provide new and innovative means to bring information and educational opportunities to greater numbers of people of all ages, including those who have historically been excluded, such as populations in rural areas and women facing social barriers.

2.3 Challenges

The challenges of globalization necessitate that countries develop their information and communication infrastructure and create an enabling environment for information and knowledge sharing.

From a health communication perspective, it is access to health content that is important, not access to a computer. As a result, the number of people with indirect access to the information and resources available on the Internet is even larger. For every person who can directly access information or support provided by the Internet, it was assumed that he talks about what he finds or actively seeks information for at least one other person such as a family member or friend. The availability of informatics products in health domain and user-friendly interfaces should be ensured for everyone interested.

The wide and rapid implementation of ICT is associated with and accelerates the globalization process. It is vital that from these new technologies benefit health education and every person in the world interested in improving his own knowledge and state of health. Similarly, there is a need to prevent the potential adverse effects of such new technologies, such as inappropriate health information and stress caused by the lack of training in the use of the ICT.

The communication of information might be limited by unavailability of broadband access and where this is available it might be too expensive for the majority to afford and that pose a special challenge.

Applications of ICT across the health sector can have positive implications for health care professionals, citizens, and technology development companies. While access to information is improving, there is a need to

target information at multiple audiences with different needs and levels of skills in using information. There are also different training needs in relation to learning how to use technology and manage information, including determining the quality of available information.

2.4 Risks

Computer has steadily emerged as a tool for efficient educational and dissemination purposes; a larger convergence of all technologies and applications related to communication has increased the potential role of ICT in education. However the main problem facing the issue of ICT in health education is not the scarcity of ICT infrastructure, rather gross underutilization of the available ICT facilities by health professionals and citizens alike.

Ideally, health informatics systems will motivate or mobilize audiences to use an ICT application, but ultimately, it is only active information-seekers with at least a minimal knowledge about the health behaviour that will use an ICT application. People need a reason to use a website and they need to know where to find it. The design and development of ICT applications should focus on providing an immediate benefit to those in search of information or support.

Health information offered might be incomplete, inaccurate, not timely or of poor quality so there is a danger that the use of ICT may expedite the dissemination of it because once entered in the computer and disseminated through the Internet, this information of "doubtful quality" will be automatically transformed to truth.

There is evidence on growing inequity between the developing countries and developed ones as a consequence of globalization. Two major concerns in the transfer of technology from one country to another are applicability and adaptability. In some developed countries, the health information systems industry is highly developed, but they were created in the context in which they are used.

The spreading of health information done with the help of dedicated informatics systems might have problems related to infrastructure and

telecommunications development, language difficulties, disparity in the accessibility of ICT between rural and urban areas, lack of motivation and techno-phobia among health professionals.

3 Study case: EDUSAN

Informatics systems for health education represent a viable solution for disseminating information and knowledge in the health education domain that can offer global access to disease-related information including prevention, diagnosis, management and treatment, trends, and research on such issues and improved collaboration among health professionals and sense of “connectedness” [4].

The “Complex Integrated System for Health Education and Disease Prevention” (EDUSAN) targets concrete goals such as efficient and accessible communications, support for collaborations, and better access to health education. It demonstrates that using ICT as a cost-effective distribution channel for a wide range of users, new possibilities can be offered for improving many aspects of healthcare by providing better health information to everyone.

The implementation of the system leads to change the people’s ideas about how to live and to understand that it is more efficient to prevent the disease than to treat it from the financial and social point of view.

The information offered by EDUSAN aims to supply, not to replace, the existing relation between a patient/user of this Internet application and his/her doctor.

3.1 Methods

EDUSAN is a web-accessible informatics product with complex informatics solutions which comprises an inter-connected database system in the health education domain, having a modular structure that offers a variety of services and information addressed to specialists and patients. The information is collected in a single point of stratified access and its safety is ensured due to a hierarchical access.

EDUSAN is an open system that allows other applications to interface with, and it respects the main tendencies of developing informatics

solutions for the health system, emphasizing the inter-operability as a must be demand to have an efficient exchange of health data and knowledge. It respects the quality criteria established by European Commission applied to health informatics products [5].

The used architecture is a Client Server type organized in three tiers and it has a structure organized into modules, being composed from elements that can function autonomously, and which architectural requirements were developed both for non-specialized users and health professionals. Each module was qualitatively evaluated for its ability to be linked with the others and for its coverage

The system is characterized by updating in real time the data and information which are organized in a relational database system about immunization, screening, prophylaxis strategies and methods, risk factors, occupational health, environmental factors, institutions in the public health field, educational models for different kinds of communities, a library with medical information and publications, and applications made to facilitate the dissemination of the analysis from the territory and the collaboration among the institutions having a role to play in the public health system (experience exchange, training, partnership proposals, promoting national and international programs in the public health domain).

3.2 Results

EDUSAN focuses to strengthen the doctor – patient collaboration, which can become much more performing and with long term benefits. It can represent a basis for spreading the IT technologies used in the health education domain. Making this system proves that a consortium including specialists from medicine and IT can create suitable technical solutions for a fast development, having a low cost and that can be a starting point for new useful projects, either for research, or to introduce new informatics facilities in the domain. Due to the health topic areas and discussion forums that are associated with public health programs, a considerable information dissemination capability has been developed.

EDUSAN contains the following applications:

- “*Preserving Health*” – it has as central point a relational database system (of immunization, screening, prophylaxis strategies and methods, risk factors, occupational health, environmental factors, institutions involved in the public health system);
- “*Educational Models*” - provides educational models concerning healthy behaviour and lifestyle, structured on collectivities;
- “*Medical Publications*” - a library with articles, reviews and book in health education and prophylaxis domain;
- “*Notions of Anatomy*” – offers primary anatomic information (see Figure 2);
- “*Co-operation Among the Institutions*” - facilitates the co-operation among the institutions having a role to play in the public health system (experience exchange, training, partnership proposals, presenting of national and international programs in the public health domain);
- “*Facilitation of Dissemination*” – concentrates and displays information of local, regional and national interest concerning the main health issues and promotes the actions regarding public health, prophylaxis and preventive medicine;
- “*Forum*”- allows an interactive dialogue among users.

Furthermore, the system provides the following auxiliary functions: the possibility that the specialized institutions could apply on-line, presenting their specific and services; promoting EU initiatives in health education and prophylaxis domain.

4 Conclusions

Globalization has brought about some conducive environment for sharing information, knowledge and experience.

All countries need to take a broad view of their changing health information needs and how health can be improved by the use of all forms of information and communications technology [6].

The “Complex Integrated System for Health Education and Disease Prevention” (EDUSAN)

belongs to the newest types of health educational applications that comprise the users’ motivation concerning educational content and its new promoting methods.

Because prevention and early detection of disease are becoming an increasingly important aspect of health care delivery, individual citizens are expecting, and being expected, to play a greater role in ensuring their own well-being and are looking for high quality and reliable information on how to stay healthy, thus also contributing to the sustainability of health care systems. EDUSAN, through new types of interactive web-based services, can support the increased availability of reliable information online.

Used effectively, health education informatics systems have enormous potential as tools to increase information flows and the dissemination of evidence-based knowledge, and to empower citizens regarding their own state of health.

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