The Imperative Role of ICI for Supporting Aging with Dignity

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Abstract: - There is a pronounced trend of aging of population. The fight against aging is a global, interdisciplinary process, which involves not only various medical branches, but also different research domains and the fast development of modern and adapted technologies and devices. There is an urgent need of a much broader implementation of Information and Communication Technology that aim to facilitate a dignified aging, an independent living and to improve the efficiency and quality of elderly care. The increasing number of medical or non medical information and the changes in the anti-aging domain lead to the necessity to create specialised Health Information Systems (like AgingNice or AGECDV presented in this paper) in which the general public and professionals should be able to find the latest information in the field of anti-aging.

Key-Words: - Aging society, Anti-Aging, ICT, Health Information Systems, Interdisciplinary Approach

1 Introduction

By 2050, the percentage of population older than 60 years will be 22% of world population, 33% in more developed regions, 21% in less developed regions and 12% in the least developed countries. [1]

By increasing elderly population, some unintended consequences occur:

- demographic consequences - a growth of the index of economic dependence, i.e. the ratio of the inactive population and the active one;
- socio-family consequences: an increasing number of families having fewer children or no children, increasing childless elders, sometimes disinterest and lack of affection for the elderly in the family etc.;
- heavy economic burden for society;
- medical implications - it is estimated that after 65 years (beginning of the third age), 50% of elderly need ambulatory or hospitalized care. While the elderly represent about 20% of the total population, they consume 50% of medical benefits.[2]

Anti-aging domain involves an interdisciplinary approach and an ongoing assessment of innovations and scientific discoveries. Information technology plays a key role in strengthening the role of information in improving health, including a view to adopting a healthy lifestyle, to ensure effective exploitation of accumulated knowledge to the benefit of all involved.

The principle of a „dignified and healthy aging” should be a cross cutting theme able to support the strengthening of prevention, health promotion and health education in the spirit in all age groups.

Despite the overall conception, a wrong one, the target of anti-aging medicine is not to prolong life for a longer period in the state of elderly person, but to delay the appearance of aging and give everyone a large number of years a maturity in a healthy condition.

The development of society and economy in countries as Romania has undesirable „side effects”. Westernization of lifestyle - more harmful foods, lack of exercise, stress, pollution in big cities - are factors that, sooner or later, throw the health system in crisis. Therefore there is a huge need to develop preventive medicine. It is much cheaper to prevent than to treat - is an indisputable truth of the modern world.

Prevention means knowledge and Information and Communication Technology (ICT) is the most quick, easy and pervasive way of learning and use of everything related to the anti-aging.

ICT is a major factor for ensuring a better citizen-oriented assistance, lower social costs, facilitating the mobility, independence and health of the seniors.[3]
Age-adapted Health Information Systems (HIS) can play an essential role in improving health for seniors by developing and promoting strong health information and knowledge. Health Information Systems, like AgingNice and AGECVD, creates an environment for developing an efficient age management, aiming to provide reliable, relevant, and understandable online health information for different type of users.

2 Aging with Dignity
In most countries of the world, the seniors do not enjoy a decent status in society.

But, the nowadays aging people are expected to be healthier, more skilled and educated, and remain more active in the workforce than their predecessors.

They expect to be considered important members of society and to have the right to be afforded dignity in their senior years. They are well aware that they have skills, knowledge and experience to contribute to society.

The expected growth in the proportion of older people during the coming decades will provide all societies with a valuable resource. Further, continued involvement in an active life in older age has benefits for the individual concerned, the community, and the country as a whole.

Aging with dignity embraces a number of factors, including health, financial security, independence, self-fulfillment, community attitudes, personal safety and security, and the physical environment.

Consequently, there is an urgent need to empower the aging persons through implementation of mass action programmes and adapted ICT.

3 ICT, Promoting and Supporting a Dignified Aging
To have a dignified aging means being able to preserve his/her self-esteem and to perform all necessary activities despite such age-specific constraints, even with the support of technology.

New, adapted ICT’s must avoid the exclusion experienced by aging persons in terms of their access to information and full participation to society. In the same time, they can also provide extraordinary assistive solutions to empower them.

In order to help the persons to age in a dignified manner, ICT should:

- improve opportunities for aging people to participate in the community in the ways that they choose;
- empower aging people to make choices that enable them to live a satisfying life and lead a healthy lifestyle;
- ensure aging people, in both rural and urban areas, live with confidence in a secure environment and receive the services they need to do so;
- enable aging people to take responsibility for their personal growth and development through changing circumstances;[5]
- foster life-long learning adapted to elderly people;
- provide accessible, timely, co-coordinated and equitable health services for seniors;
- have the potential to provide individual solutions and hence to meet individual needs.

The trend is the fact that the use of ICT is becoming an interest among people in their sixties or seventies. It is important that the delivering system of ICT be devised for those people's convenience, instead of assuming that they can not use ICT because of their age and geographic disadvantages.[6]

ICT has great potential for improving the quality of life foraging people: it can improve the physical and emotional well-being of them. ICT can also enable older people to remain connected to family and friends, especially with those who are distant. ICT can also help older people remain employed and maintain or upgrade their skills, or it can ease the transition to retirement.

The efficient health education and sharing of health information is indispensable for adopting a healthy way of living and also for the effective delivery of care. This is particularly important for aging people and those with chronic conditions, who often have several physicians. HIS can ensure the timely and accurate collection and exchange of health information data that are likely to foster better care co-ordination, and the more efficient use of resources.[5]

The following two projects – AgingNice and AGECVD - belongs to the health education information systems with particularization in the anti-aging domain and allows the sharing of the knowledge concerning the specific research and the promotion of the theoretical and practical information, both among the stakeholders from the medical area and at the person level. They are research projects developed inside the National

3.1 AgingNice


AgingNice includes a system of interlinked databases with applications for anti-aging methods and strategies, clinical and laboratory investigations to prevent aging, anatomical changes, educational models, self-assessment tests defining a custom behaviour, trends in the anti-aging biomedicine, anti-aging campaigns, and applications to facilitate the dissemination of the therapeutic protocol, case studies and recent research among experts from a wide range of medical fields. [7]

AgingNice is an open system that is ready to be integrated in the environment of the heterogeneous, comprehensive national information system, available on many platforms and with its capacity to interface with any existing or future applications through direct access or web interface.

The system can be implemented with minimal effort and no special claims regarding the electronic equipment.

Information provided by this system meet the qualities that gives it a high quality standard, namely: opportunity, timeliness, accuracy, completeness, availability, validity, different ways of presentation.

The novelty of the project is primarily brought by the approached domain. Existing web applications in Romania focuses on the cosmetics, aesthetic and pharmaceutical fields of the anti-aging domain, and less on explaining the degenerative processes, prevention and methods of reaching a active and healthy aging. A project like this one covers the so far insignificant use of ICT in the complexity of the anti-aging domain, focusing on presenting easy to understand information and adapting the communication strategy, according to the response and needs of the beneficiary to whom it is addressed.

The way in which the structure of content was done is a novelty for new computer applications related to anti-aging. Information is collected in a single stratified access point in which the database system includes multiple anti-aging issues, including personalized therapeutic models and self-assessment tests adjusted to current research.

Another novelty for a Romanian health informatics system with application in the anti-aging domain is that it is human-centred, with a high degree of flexibility because of the dynamic and integrated structures able to adapt to various and changing health needs of the society in general, and of individuals in particular. These structures will empower the citizens to actively participate in taking decisions regarding their own health.

In the context of an increasing interest of the policy-makers concerning the steadily rising of the aging of Romanian population and of implementing new strategies that support the adoption of methods for obtaining an active aging, we estimate that the AgingNice complex system has great potential to be used in medical institutions, anti-aging / gerontological associations and foundation, public institutions, but also by ordinary citizens.

Given that the elderly are the biggest consumers of resources in the health system and that their number is growing, we appreciate that AgingNice, through the information provided, structure and purpose can make an important contribution to reduce costs at both individual and at company level.

The beneficiaries of the AgingNice system are the Romanian citizens, professionals from a variety of medical fields with concerns in anti-aging domain, organizations and bodies responsible for the health of the population.

In conclusion, AgingNice can bring remarkable benefits at both individual and society, because:

- ordinary citizens can have better access to health information due to the accessibility and usability of AgingNice system and may become increasingly involved in decision-making processes concerning them;
- professionals interested in anti-aging can have multidisciplinary information in one centralized point and opportunity to exchange experience;
- the disseminated information aims to increase the public awareness and to change the way the population think about adopting a better lifestyle, to empower the citizen in the benefit of its own health in order to extend the autonomy and quality of life in old age;
- the complexity of the structure and of information disseminated by AgingNice:
  - offers an overview of the many facets of anti-aging medicine, which can lead to much better decisions on strategies, methods and steps to be followed,
  - improves and diversifies the doctor-patient relationship by establishing a higher level of understanding of the degenerative
processes, a common language and by sharing decisions about the management of aging,
- leads to a decreasing of costs borne by citizens, the health and the social system in the context in which disabilities and aging-related diseases are reduced, avoided or delayed with the help of prevention, lifestyle changing and of an extended integration into society through an active aging.

3.2 AGECVD
The research project "Complex Study of Metabolomics, Genomics, Epigenetics of Age Related Atherosclerosis and Cardiovascular Pathology – AGECVD" is designing a protocol of investigations, diagnosis, treatment and monitoring of atherosclerosis and cardiovascular diseases specific of aging and is developing a system of health information for collecting and analyzing results of biomedical investigations and psychosocial surveys.

The health information system of AGECVD will disseminate the results and it will facilitate the communication among specialists, with an important impact on the Romanian elderly health condition and life span increases.

The main objectives of AGECVD are:
- to establish markers that predict the risk of atherosclerotic processes developing and progressions’ as involved with aging related cardiovascular diseases and in view of a larger range of preventive strategies, which might contribute to elderly’s health condition improvement.
- to create a framework to facilitate transfer of data, information, knowledge.
- to support and provide arguments for the novelty of an integrative approach on aging related atherosclerotic processes that impact health condition and life expectancy increase.
- to disseminate of research outcome, by organizing an open space for informing specialists and individuals of the general public with interests in preventing and treating causes of pathology induced aging;
- to continuous update knowledge on atherosclerotic processes’ complexities and CV pathology by use of a health information application which ensures a higher degree of flexibility to changes and efficiency in handing over information.

Taking into account the national strategy priorities, this project will have a social impact because it will improve collaboration among specialists and organizations making decisions that concern health of the population. AGECVD will draw attention for officials in charge about consequences of not considering prevention and evaluations of the degenerative processes.

AGECVD is a solution for client/ server systems based on relational database management that provides superior functionality in terms of user interface and improving access to databases. The user interface is consistent and ergonomic, easy to understand and intuitively use, which allows users easy access to databases and information, being necessary to have only minimal computing knowledge.

The multi-user authentication system based on access rights and roles regardless of the operating system, allows flexible setting of different levels of access to the database functionalities. This ensures integrity and security to the data collection.

It offers the user and the Romanian medical scientific community the informatics and information support necessary to improve socio-hygiene behaviour and knowledge dissemination in the anti-aging domain.

4 Conclusion
The knowing of the aging process is necessary in order to give people of all ages useful prevention tips needed for obtaining the best possible healthy and dignified aging. The increasing use of the ICT in the aging domain leads to an increasing public awareness concerning the empowerment of the citizen regarding his health in order to prolonge autonomy and life quality.

ICT, delivered through both mainstream and assistive technologies, have considerable potential as a means of meeting the growing needs of future European senior citizens.

There is a need to invest in the smart use of technology and exploitation of information because they can help us to address the challenges facing society, the aging population being one of the most important.

ICT may pose unnecessary physical and cognitive demands depending on the hardware or software that is selected. Understanding how aging persons use it is a critical first step in overcoming the challenges of ICT use.

It is essential that the aging persons become adept at using the ICT for health care purposes,
especially as we move towards the knowledge society.

References:


