Challenges for using IT in Mexico's health care industry (Aguascalientes México Case)

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ABSTRACT

For Mexico it exists a huge number of challenges for to use IT in the Health sector, like what [6], say, about the use of information and communication technology (ICT), or eHealth, that could be developed in the home health care of premature infants through the use of video conferencing or a web application improves parents' satisfaction in taking care of a premature infant at home and decreases the need of home visits. The families readily embraced the use of ICT, whereas motivating some of the nurses to accept and use ICT was a major challenge. Or like the experience in India about the [15], in which their research observes that electronic healthcare has various advantages, such as easy recording, retrieval, and sharing of patient data anytime and anywhere while providing data privacy. On the other hand, many developing countries still rely on traditional paper-based healthcare systems that are quite vulnerable to data loss, loss of patients" privacy due to non-secured data sharing, and mandatory consumption of physical space to store patients, so for Mexico this will be a good strategy for improve the health sector administration with more efficiency and in this paper is presented based on the literature revision the principal challenges and the more significant health services through the use of e-health and the opportunities for e-health use in Aguascalientes State Mexico, due to the water contamination of Rio San Pedro, the aquifer of the Aguascalientes valley.

Key Words: (e-health, challenges, ICT.)
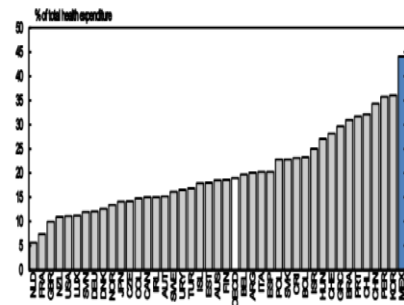
INTRODUCTION

Mexico needs to improve its health outcomes, which affect well-being, educational outcomes, and productivity [13]. The introduction of *Seguro Popular,* a publically-funded universal health insurance program, ten years ago helped improve some measures of health performance, but most health indicators remain worryingly poor, and the system is highly fragmented and inefficient. For instance, life expectancy at 74 years is still six years below the OECD average; infant mortality rates are among the highest in Latin America; mortality from coronary heart disease is increasing even as it is falling in almost every other OECD country; the obesity rate is the second highest in the OECD; and almost one in six adults are diabetic [15].

Improving health care calls for more efficiency in health spending. Currently, Mexico's public spending on health is 6.2% of GDP, significantly less than the OECD average of 9.3%. Administrative costs, at 9.2% of total health spending, are the highest in the OECD and have not declined over the past decade. Likewise, out-of-pocket spending is nearly 50% of total health spending – the highest in the OECD (Figure 1). High out-of-pocket spending drives families into poverty, offsetting the beneficial effects of social programs like *Oportunidades,* [11].

Figure 1. Out-of-pocket payments are the highest in the OECD

As a percentage of total health expenditure, 2012

As a percentage of total health expenditure, 2012
Note: The figure shows data that is comparable across countries. However, according to IMSS, these figures underestimate Mexico's health expenditure as a share of GDP (which should be 8.6% according to IMSS), and over-estimates the out-of-pocket payments as a share of total health expenditure (which should be 37% according to IMSS). This is because public institutions, such as IMSS, can buy medicines at lower prices. Once the prices paid by the private sector are considered, public health expenditure increases and therefore, out-of-pocket spending, as a share of total health expenditure, is lower.

Source: WHO Global Health Expenditure database.

Health care is currently provided by segmented networks, each employing its own staff, with no synergies and high duplication and entitlements are determined by employment status. The largest providers are *Instituto Mexicano de Seguridad Social* (IMSS), for people in formal employment, and *Instituto de Seguridad y Servicios Sociales de los Trabajadores del Estado* (ISSSTE), for civil service employees. *Seguro Popular* covers remaining families, thus helping to achieve complete coverage of the population.

In this paper is shown the challenges that Mexico has for to use e-health and the opportunities for to improve the health service and the health population conditions in Mexico through the use of e-health.

OBJECTIVE

The aim of this research is to identify based on the literature revision, the challenges and opportunities of using e-health as a proper practice of health institutions in Mexico and Aguascalientes State.

RESEARCH QUESTIONS

Which are the principal challenges in México for using the e-health as a proper practice in the health institutions.

Which health practices are the most important and significant for to improve the health services in Mexico through the e-health implementation.

HYPOTHESIS

The e-health implementation in Mexico has a positive influence in the health services and improve the life expectancy in Mexico of 74 years, [13].

METHODOLOGY RESEARCH

The methodology utilized is a qualitative method, consisting in the literature compilation.
The research method used in this paper, is the Documentary Compilation, which is based on the printed manuscripts results of various authors presenting empirical evidence on the use of the e-health in different countries and the benefits they have obtained through the implementation of e-health as a normal practice.

LITERATURE FRAMEWORK

[7], everybody talks about e-health these days, but few people have come up with a clear definition of this comparatively new term. Barely in use before 1999, this term now seems to serve as a general "buzzword," used to characterize not only "Internet medicine", but also virtually everything related to computers and medicine. The term was apparently first used by industry leaders and marketing people rather than academics. They created and used this term in line with other "e-words" such as e-commerce, e-business, e-solutions, and so on, in an attempt to convey the promises, principles, excitement (and hype) around e-commerce (electronic commerce) to the health arena, and to give an account of the new possibilities the Internet is opening up to the area of health care. Intel, for example, referred to e-health as "a concerted effort undertaken by leaders in health care and hi-tech industries to fully harness the benefits available through convergence of the Internet and health care." Because the Internet created new opportunities and challenges to the traditional health care information technology industry, the use of a new term to address these issues seemed appropriate. These "new" challenges for the health care information technology industry were mainly (1) the capability of consumers to interact with their systems online (B2C = "business to consumer"); (2) improved possibilities for institution-to-institution transmissions of data (B2B = "business to business"); (3) new possibilities for peer-to-peer communication of consumers (C2C = "consumer to consumer").

So, how can we define e-health in the academic environment? One JMIR Editorial Board member feels that the term should remain in the realm of the business and marketing sector and should be avoided in scientific medical literature and discourse. However, the term has already entered the scientific literature (today, 76 Medline-indexed articles contain the term "e-health" in the title or abstract). What remains to be done is - in good scholarly tradition - to define as well as possible what we are talking about. However, as another member of the Editorial Board noted, "stamping a definition on something like e-health is somewhat like stamping a definition on 'the Internet': It is defined how it is used - the definition cannot be pinned down, as it is a dynamic environment, constantly moving."

It seems quite clear that e-health encompasses more than a mere technological development. I would define the term and concept as follows:

> *[7] e-health is an emerging field in the intersection of medical informatics, public health and business, referring to health services and information delivered or enhanced through the Internet and related technologies. In a broader sense, the term characterizes not only a technical development, but also a state-of-mind, a way of thinking, an attitude, and a commitment for networked, global thinking, to improve health care locally, regionally, and worldwide by using information and communication technology.*

This definition hopefully is broad enough to apply to a dynamic environment such as the Internet and at the same time acknowledges that e-health encompasses more than just "Internet and Medicine".

As such, the "e" in e-health does not only stand for "electronic," but implies a number of other "e's," which together perhaps best characterize what e-health is all about (or what it *should* be). Last, but not least, all of these have been (or will be) issues addressed in articles published in the Journal of Medical Internet Research.

Challenges for e-health use in Mexico.
One significant challenge for Mexico improve Health care sector is like the research conducted by [12], in which they propose that Aged care residents lack mobility and rely on caregivers for medications; subsequently treatment is often reactive, based on prescribing medications for known and newly diagnosed conditions. Comprehensive Medical Assessments (CMAs) are available at no cost to residents in aged care and Health Cube has developed an electronic CMA process that underpins the Preventative Aged Care Service package, which promises to change aged care treatment through a new model of (general practitioner) GP-patient engagement.

Additionally, for Mexican Health sector challenge it could be considered that [12], mention, Developing Information and Communication Technology (ICT) supported health communication in PHC (Primary Health Care), could contribute to increased health literacy and empowerment, which are foundations for enabling people to increase control over their health, as a way to reduce increasing lifestyle related ill health. However, to increase the likelihood of success of implementing ICT supported health communication, it is essential to conduct a detailed analysis of the setting and context prior to the intervention.

Other challenge for Mexico improve Health care sector is about that [2], mention about the Nomadic" patients who are people who, mainly for work, move around the world very often. Such people have the right to an effective, safe, fast health-care assistance wherever they are. Some technological devices are currently being experimented, in order to let personal health-related information be portable and easily transferable. However, each of these devices follows an idiosyncratic concept. An explorative study has been carried out in order to understand which procedures, if any are currently being used in Italy to manage nomadic patients' data. The goal of this work was to outline a concept of information.

Since the Diabetes dieses is one of the most important disease in Mexico, this strategy propose by [18], is very important based on ICT Tools adaptation. Information and communication technologies (ICT) have great potential to address some of these challenges faced by

several countries in providing accessible, cost-effective, and high-quality health care services. This paper presents the Mobil Diab system which is a tele medical approach proposed for the management of long-term diseases. The system applies modern mobile and web technologies which overcome geographical barriers, and increase access to health care services. The idea of the system is to involve patients in the therapy process and motivate them for an active participation.

With the purpose of better protect health workers, [20], developed a research regarding a tool that led to developing information and communication technology (ICT) tools. The research conducted also showed the need for better workplace inspections, so a workplace audit tool was also developed to supplement worker questionnaires and the ICT. To improve occupational health and infection control, resulting in an improved web-based health information system to track incidents, exposures, and occupational injury and diseases. As the H1N1 pandemic struck, the online infection control course was adapted and translated into Spanish, as was a novel skill-building learning tool that permits health workers to practice selecting personal protective equipment.

Mexico currently occupies the first place world in obesity, which represents one of the main problems of public health of the country. This has aroused the interest and need for technological and scientific community to join to health specialists, to generate strategies to strengthen traditional preventive treatments for weight control. One of these strategies is the development of applications e -health for the Android operating system. Even though, there are some applications available for this purpose, most of them don´t have a backup of health professionals, making unreliable diagnoses and suggestions. To assist in reducing this problem, the most popular Android applications obesity were analyzed, this allowed to establish key features to consider in e-health applications. Such findings were embodied in an application for the monitoring of Obesity, where the obtained results were discussed at the end of the article referred.

E-health Opportunities in Aguascalientes.
[1], comments that the basin of river San Pedro is the most important hydrological system of the state of Aguascalientes. It is confined to the hydrological region Lerma-Santiago. The San Pedro river has an annual discharge of 208 million m^3. This river runs through the state from north to south in a straight line, with a length of 90 km and a drainage surface of 2820.6 km^2. This river is also the main collector of rainfall, wastewater, and tread water. Fifty-six communities are based along the San Pedro River, including six principal municipalities as well as the city of Aguascalientes. Altogether, about 80 per cent of the inhabitants live in these communities. Historically, domestic, industrial, and farming wastes have been discharged into this river basin. For the last 20 years, wastewaters have been treated before they are discharged; however, the installed treatment system do

not remove the stubborn xenobiotics. The river does not have a flow baseline and about 96 per cent (nearly 120 million annual m^3) of treated and un-treated waste waters flow directly to the river. Therefore, the contamination of the San Pedro River constitutes a risk to the public health of the communities bordering, it, and is a potential source of contamination to the aquifer of the Aguascalientes valley [5], State authorities have set the knowledge of the current degree of environmental quality of this river and its planned remediation as a high priority [16], [3], [4], [10].

CONCLUSION

After analyzing the literature related to the research topic, the hypothesis is demonstrated, since all the challenges presented above represent opportunities for improve the health services and offer a health service more accrued and efficient which affect positivity the expectancy of Mexicans average time of life of 74 years, and it's considered that the challenge for e-health use more important for Mexico situation is the related to diabetes control due to very high impact in Mexicans citizens, considering that (ICT) have great potential to address some of these challenges faced by several countries in providing accessible, cost-effective, and high-quality health care services, and for the Aguascalientes state, e-health represents a great opportunity for to prevents infection disease due the water contamination of river San Pedro, since it's the aquifer of the Aguascalientes valley.

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