

Online Database System for Patients Data Organization

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ABSTRACT: *Through this paper we investigate the significance of the online database system which can manage health records. The ehealth systems can able to store mass of individual patients' data. In this paper with the help of the investigation we have prepared a questionnaire to extract user perception and surveyed them extensively. We understand that many parameters and facts need to be considered while processing health care data. It is also important to get specific as well as detailed data to plan the ehealth data system.*

Keywords: eHealth, Electronic health record, Personal data, Technology

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1. Introduction

It goes without saying that the advent and exponential growth of the information and communications technology has led to the dissemination of the knowledge, experience and expertise of various types of medical related professionals and practitioners who may easily pass it on to their peers be they in universities, various types of health centers, pharmaceutical organizations, insurance companies and government decision makers. At the same time the ease by which people in the developing or developed countries move to different geographic regions especially when work, education and life style demands it. This leads to an increasing number of families or individuals that “move around” from country to country often one far from the other bringing together their needs and customs on a variety of issues one of the most important related to health. Finally, looking things from another viewpoint, most of the wealthy societies are seeking ways to tackle their so called fiscal financial problems which are in part due to increased public expenditures on medical treatment, medical drug overuse, inconsistent insurance coverage policies around the world and so on, all results of the admitted as aged population in these countries.

The aforementioned characteristics of today's globalized societies yield as a result one of the hottest topics nowadays: that of the utilization of the modern technology in the health system for the benefit of the people through the improvement of facilities, infrastructure and health services and the cost reduction and the application of common centralized policies on the matter. Probably the most important manifestation-realization of this concept is the electronic health record often abbreviated as EHR. Thus, as quite frequently happens with technology, practitioners of the medical and nursing professions face several dilemmas.

On one hand the U.S. department of health services suggests it is the responsibility of the medical and nursing practitioners and

of the hygiene and health systems to improve knowledge about health. The E.U. in October 1995 gave the directive of the eEurope initiative that would lead the various European societies, especially of Central and Eastern Europe to this eHealth era [1]. Several years have passed, though, especially in countries like Greece, where this initiative is indeed at a standstill. There are various reasons for that among which the lack of enough communication of the benefits of eHealth to those directly interested and the lack of a necessary legal framework to define the rules that will govern such practices by both professionals and patients.

On the other hand, however, the most intriguing dilemma that medical and nursing practitioners are facing when and where this is put to practice is where is the borderline between the medical and nursing practitioners' need to unearth as much of a patient's personal data and the individuals' right to keep some of this personal data away from others' awareness even to the cost of that person's good health and/or life. In other words:

- What kind of an individual's personal and/or medical data should be put in the personal health record?
- What are the types of people that should be eligible to view such sensitive personal health records?
- Should there be any authentication process or scheme to be followed in order to ensure that only certain professionals have access to such information?
- What are the risks involved in developing a database that would store this type of personal information and then make it available online to the persons with the right to access it?

2. Aims and Objectives

The basic aim of this research study is to investigate the technological, moral and societal issues resulting from the conflict that appears between the two seemingly radically contradicting ideas of keeping as detailed electronic health records as possible available anytime, anywhere and the need to preserve personal privacy through the protection of an individual's personal data. In order to find realistic answers and, maybe, the golden mean the following objectives should be met:

- Examine whether the local population is aware that such an undertaking is technologically feasible in Greece at a reasonable cost and at low or no risk at all,
- Investigate whether the various groups of society involved are positive in supporting this idea both financially and operationally or, on the contrary, there are possible moral or other issues that could be raised by different peoples in relation to politics, religion, socioeconomic status, etc.,
- Ask the peoples involved at both ends of the story, medical/nurse practitioners and prospect or current patients, about their personal views of the type of information that should be available in such health records and the security protocols and/or legal framework that should be developed for such a purpose.

3. Background

3.1 Basic terminology

The electronic health record, stored in some type of electronic device, is one that contains all kinds of personal and medical data about a certain patient/individual. More specifically the Office of Health and the Information Highway in Canada suggested that this record should be able to facilitate the online availability and authorized access of protected private health and/or personal data of an individual [2]. The same organization clearly states that privacy legislation and establishment of security standards must be in place to ensure that electronic records and the information they contain are protected.

The electronic card often called electronic health (and/or insurance) card is the materialization of the concept of the electronic health record together with the necessary infrastructure. It is an electronic (magnetic) card, similar to the common credit card, in which various types of health and/or other data could be included like personal information of the cardholder with a personal photo and/or fingerprint, insurance coverage, medical and nurse coverage in hospitals, personal and/or family medical history, vaccinations, allergies, various diagnosis, prescribed medication, medical referral notes, medical exam results, and so on [3].

In order to realize the whole concept there are the security issues to be faced. From a legislative viewpoint a specific international

legal framework must be put in place related to data privacy, security and access rights so that all countries involved in the project follow the same laws on the matter especially the E.U. countries as member states of the E.U. From a technical point of view it is necessary to establish appropriate standardization related to security protocols over networking and similar concepts in order to assure that the probability of data loss or data compromise due to unauthorized attack on the networks is very much limited. Lastly, acceptance from the part of the medical and related personnel of the health sector must be achieved on a high level as well as interoperability and compatibility issues must be resolved before the launch of the project in any country [4].

It is clear, that there is a road map to follow in order to succeed in realizing the plan that must be established for the project to work [5]:

- Secure patient identification through the electronic card,
- Quality of data recorded in the card,
- Definition of who is governing and managing the data,
- Successful management of such a large international scale volume of data,
- Reliability and accessibility of the data on a 24/7 basis independent of operating systems and electronic devices,
- User friendly system that promotes its usability across a variety of professions, ages and cultures,
- Integration and standardization through the development and application of common protocols for different equipment and devices,
- Security mechanisms in place.

3.2 Expected benefits

The supporters of the idea of realizing the project of electronic health record through the utilization of the electronic health card provide the following arguments:

- It “*comes to modify health services*” to the better, “*resolves issues related to bureaucracy*”, eliminates “*data redundancy*” and provides enhanced credibility in regard with a patient’s medical history especially when the patient is in no position to communicate with the physicians during an emergency [3] especially in the cases of chronic disease patients [6],
- It will greatly contribute in the effort of radically reducing (up to 80%) the financial losses of the health system in countries where the problem is overwhelming [6], by almost eliminating the bureaucratic procedure currently required when there is demand for medical treatment costs and other hospital expenses to be collected from the local insurance company or the international in case the patient is not a local resident [7],
- It will bring more balance in the relationship between the doctor and his/her patients and vice versa allowing patients to safely even get a second opinion on things they did not know till then [8],
- Having established a centralized public system controlled by the local governments will empower the policy and decision makers of the countries have a clear and complete view of the health, insurance and all related sectors and make well-informed appropriate decisions [2],
- If decided the prospects of having demand for new technology and medical equipment related with the project, which is estimated in the tens of billions just for the region of Germany for the next few years, opens new doors in economic growth and employment that is another problem that many countries are facing nowadays [6].

3.3 Possible concerns and problems

The realization of the electronic health system with the utilization of the electronic health card, experience shows, could be accompanied by a number of serious possible concerns related to technical issues. In a somewhat older study Iakovidis provides a set of obstacles that blocked in the past and are expected to do so in the present and in the future as well any effort towards succeeding in this project until the issues are properly tackled in a well-organized manner. He reports that [9]:

- Many physicians, especially in certain cultures, are not willing to share patients’ privacy health data,
- There are technological challenges related to storage, equipment compatibility in different countries, maintenance costs, lack of standardization,

- Confidentiality and security issues are not yet resolved and are quite unlikely to be resolved soon,
- Willingness to change the way they work, like in any other technology advent, from large parts of the populations including the medical practitioners and the nurse personnel is never a given [10],
- Lack of international legal framework on such a serious international scale project,
- There is a certain difficulty, due to lack of prior experience and formal reports, to assess and evaluate the equipment available in the market for the cause,
- The usability of electronic health records systems and the degrees of acceptability associated with implementation can often be barriers.
- There seem to be no detailed plan in migrating from the many local health care systems to the integrated international electronic health system which by itself takes time,
- It looks that there is no business plan or case to support the idea other than the plain simple “*let’s just do it*”.

One other concern, mainly related to socio-cultural issues which could and often block this development, is the personal data protection issue. Under the Laws 2472/97 and 2774/99 of the Greek Legal System a patient has the right of being informed about sensitive private health data and their process and timing of that. The law guides this should be completed in a timely manner. On the other hand the medical confidentiality rules that nobody may force a medical doctor to disclose a patient’s health and/or medical related personal information. Balancing the two in the electronic card is a very challenging task especially when a number of other business, medical, legal and governmental entities are to be involved [11].

No safe conclusions can be drawn from a study like this one unless all various issues are included, even those regarded as very personal, or very conservative or even extreme. The methodology followed was formed with this in mind.

4. Methodology

This is an exploratory study in which the authors sought individuals’ understanding, views and reactions on the subject. The authors self-administered a specific structured questionnaire handed-out to the survey participants hence utilizing the communication method of data collection. The survey contacted was both qualitative and quantitative in nature. It includes both types of questions aiming at both describing the issue in as much detail as possible, thus quantitative, and understand and interpret it in the general environment in which the whole idea-concept is shaped, thus qualitative.

4.1 The sample

The survey was fully deployed for a period of 4 weeks and 301 persons participated in it. The scope of this study was the country of Greece and more specifically Northern Greece but the authors believe that the people, issues and mentality are applicable at least to all Greek residents and, quite possibly, to other populations especially of the developing countries as well. The sample size should be considered appropriate considering the total population of the geographic area under study was around 2,500,000 residents yielding a rate of 1.2 respondents for every 10,000 individuals in the population.

An effort was made to have a sample of a population as diverse as possible in different ways, i.e. as to age, education, family income and profession. The specifics of the sample are available to anyone interested and prove its diversity.

4.2 The Questionnaire

Questions 1-4, commonly characterized as demographic, aimed to identify each individual respondent’s main personal characteristics that probably shape the person’s attitude and behavior towards various types of issues related to the research study. The participants were asked about their age, profession, educational level and income. Question 5 and its sub-questions, aimed at presenting the level of awareness of the local population on a number of issues related to the study. These issues, coming from the literature review, were all important if one wants to draw conclusions as to how much ready this population is to understanding, accepting and be skilled enough to get actively involved with the project under study. The authors allowed only YES or NO as possible answers to the various sub questions and the ones not answered at all were considered as answered with a NO.

Then, 6, 7 and 8, aimed at seeking to find respondents’ opinion on the elements of personal and health related data that could/should be included if such an electronic health record was to be implemented and who should be the person(s) allowed to access

this record. More particularly the personal and health related data elements were divided into the very similar questions 6 and 7 for reasons of practicality so as to have more manageable findings to analyze.

Having set the background for the basics, using respondents' insight from the previous, question sets 9 and 10 were utilized to understand their expectations of the benefits of the implementation of such a large-scale project and, also, their possible concerns related to it. These sets of questions, especially question set 10, were formed in such a way as to give the opportunity to the participants to say the things that many of them are thinking in their everyday lives but for some "*taboo*" reasons they would never say quite often because they were never asked.

5. Findings

5.1 Level of awareness

In general, the majority of the local population is informed about the basic issues related with the idea behind this research study with maybe a slight exception concerning the information they have about the microchip implants (table 1). 72% of the respondents appeared knowing about the storage media available to store the various elements that could be included in a person's private e-health record thus making the project technologically feasible. The majority (55.8%) was aware of the possibility to have such records available through the Internet and other intranets and accessible to authorized individuals independent of time and place. Most (62.8%) are familiar with the term European Insurance Card and the discussion on having such an electronic device replace various other types of local insurance documents. The only technology most do not seem to be quite familiar with (56.1%) is the microchip implants.

There is a well-known concern related to accessibility as to the person(s) that should have access to this record except, of course, the patient herself. Most of the local people are aware of this controversy (70.1%). They are also aware of the other controversy on the types of personal data to be included in such an electronic record (70.1%) and the controversy as to who should bear the cost of implementing such a large-scale international project (57.5%). They have knowledge of the security risks of such a project and the fact that it has been proven impossible to have a technological mechanism absolutely secure from outside malicious attacks and/or "authoritarian" abuse of such personal data (73.8%) in certain countries or regions of the world. Finally, they understand the need to be acquainted with at least the basic Internet technologies and be skilled enough to use it if one would be willing to actively get involved with this project (77.7%).

Table 1: Respondents informed about aspects of the issue of protecting a patient's personal health record (Sample size: 301)										
Answer	Technological feasibility %		Accessibility & availability %		European Insurance Card %		Microchip implants %		On accessibility %	
	Yes	217 72,1	168 55,8	189 62,8	132 43,9	211 70,1				
	No	84 27,9	133 44,2	112 37,2	169 56,1	90 29,9				
	Types of personal data %		Who to charge the cost %		On security of the record %		Technology training requirements %			
	211 70,1	173 57,5	222 73,8	234 77,7						
	90 29,9	128 42,5	79 26,2	67 22,3						

Table 1. Respondents informed about aspects of the issue of protecting a patient's personal health record

5.2 Suggested personal data

Concerning the types of personal elements that should be included in the Electronic Health Record (table 2) almost all (93.4%) participants believe that the "date of birth", hence the "*age*", of the individual should be included. 90% would expect the individual's "*gender*" to be included as well. A very large number (86.7%) would like to see the "*name*" in the record and a surprising high 76.7% were "*drifted*" by the medical doctors' and the nurses' recommendation to include the "*height/weight*" of the individual in it. These personal elements could be considered as the ones generally admitted to be in the record.

Then, there is a second group of personal data for which the public opinion is positive in being contained within the record. “*Place of birth*” is the first in this group with the majority 68.1% being in favor of it, closely followed by the patient’s “*profession*” (65.4%). The third element in this group, rather surprising, is the “*Marital Status*” for which the majority 59.5% suggested it should be among the record’s contents. Last in this group is the “*Nationality*” of the individual for which the majority of the respondents agreed is important to be stored in the record (56.1%).

Lastly, there are some personal elements for which the respondents were rather divided or even reluctant to accept. The individual’s “*education*” is one of them for which less than half (45.8%) would approve and “*race*” is another one with exactly the same acceptance rate. “*Religion*” is only approved by 35.9% and “*Sexual Preferences*” only by 28.9% of the sample population. Finally, “*income*” is a personal element that a significant 17.9% of the respondents would not mind to see in the record. What strikes as quite surprising in this group is that despite these seemingly relatively low rates of acceptance for the aforementioned 5 elements they numbers are actually rather high considering the very sensitive type of personal information they suggest.

Table 2: Respondents' selection of the personal info to be included in the personal health record (Sample size: 301)														
Answer	Name	%	Place of birth	%	Gender	%	Age	%	Nationality	%	Religion	%	Marital Status	%
Yes	261	86,7	205	68,1	271	90,0	281	93,4	169	56,1	108	35,9	179	59,5
No	40	13,3	96	31,9	30	10,0	20	6,6	132	43,9	193	64,1	122	40,5

Table 2. Respondents’ selection of the personal info to be included in the personal health record

5.3 Suggested medical data

The respondents were, also, asked to select the medical information elements they believe should be included in the Electronic Health Record of an individual/patient (table 3). First, there are the elements that are highly recognized as of special importance and, thus, should be included in the record. The top priority element, not as trivial as one might expect, is the “*chronic disease*” by which an individual may be suffering (95%) closely followed by the “*surgeries/operations*” the person has gone through (91.7%). Next, quite as expected probably, although higher in this order, the respondents believed “*blood group*” should be included (87.7) and not far behind that the “*medication*” a patient follows (84.4%). Then, this order of preference proves how important three more elements are, when comes to provide everyday health care services to patients and these are “*family medical history*” selected by (82.7%), “*medical examinations and results*” picked by 82.1% and “*contact person in case of an emergency*” chosen by 76.7% of them. Last in this list of the first group is an element the authors were expecting to see very low or even rejected, because of its very sensitive nature, but was regarded as very important and considered by the vast majority to be in the contents of the record namely a patient’s “*drug addiction*” (71.1%).

The second group consists of the rest of the elements which, rather unexpected again, were selected almost all of them by the majority of the participants, although in a considerably lower order than the previous elements, despite their particularly sensitive nature. “*Insurance coverage*” is the first in this second list (65.4%) showing how important is this matter in an era in which no one has serious health coverage by the various related organization, private or public, without being insured. Next is an individuals’ particular “*diet*” (59.5%) that seems to be highly regarded as an important component as it is directly connected with both the person’s good health and, rather frequently nowadays, with the treatment received especially when facing chronic diseases.

The authors’ surprise came from the next three elements because of their very sensitive nature and the fact that still more than half of the participants are willing to disclose medical information in their possible health record regardless of how “*personal*” that information was, and still is, considered to be. They are the “*organ waiting list*” (58.5%) through which a patient’s need for

a specific organ transplant could be recorded in the record, the “*fears and/or mental illnesses*” (56.8%), i.e. mainly the psychological or similar problems an individual is facing, and the “*patient’s special category*” (52.5%) a field in which particular information about the patient could be included like if the person is suffering from diabetes, or cancer, or HIV.

Finally, it was also rather unexpected to find that a “*patient’s personal m.d.*” was not given particular significance, at least compared with the aforementioned elements, with just a little more than half of the participants selecting it as important for the electronic health record (52.5%) even if it is the personal medical doctor of a patient who should be contacted first to advise for possible treatment during emergencies. On the other hand, seemingly secondary medical information like “*recent trips*” were regarded as considerably serious by 41.5% of the respondents and suggested as possible components in the record. Lastly, there were a 7.6% of them who were not quite covered with these options given by the medical doctors through this survey (“*other*”, 7.6%).

Answer	Chronic disease %	Drug addiction %	Surgeries/ Operations %	Medication %	Family medical history %	Patient's personal M.D. %	Insurance coverage %	Diet %
Yes	286 95,0	214 71,1	276 91,7	254 84,4	249 82,7	158 52,5	197 65,4	179 59,5
No	15 5,0	87 28,9	25 8,3	47 15,6	52 17,3	143 47,5	104 34,6	122 40,5
	Organ waiting list %	Blood group %	Patient's special category %	contact in case of emergency %	Fears and/or mental illnesses %	Recent trips %	Medical examinations %	Other %
	176 58,5	264 87,7	158 52,5	231 76,7	171 56,8	125 41,5	247 82,1	23 7,6
	125 41,5	37 12,3	143 47,5	70 23,3	130 43,2	176 58,5	54 17,9	278 92,4

Table 3. Respondents’ selection of the medical info to be included in the personal health record (Sample size: 301)

5.4 Recommended person(s) to reveal the electronic health record in emergency

The most notable and obvious comment resulting from the statistics in table 4 is that the respondents were too reluctant to decide whom to reveal such information as the one contained in the electronic health record and there is a dispute on who the possible person(s) could be. The only person almost all agree should be trusted is, as well expected, the patient him/herself (84.7%). Following this selection from afar is the “*current physicians/nurses*” (59.8%), i.e. the ones that at the time of an emergency are appointed with the task of treating the patient. The “*family physician*” comes third and quite close with a 56.5% of the respondents suggesting it, although the authors were expecting much higher acceptance of this person since s/he is presumably the person that best knows the patient’s overall medical condition.

Answer	Patient	%	Husband/ Wife	%	Patient's children	%	Parents	%	First Grade Relatives	%	Family physician	%
Yes	255	84,7	149	49,5	120	39,9	113	37,5	23	7,6	170	56,5
No	46	15,3	152	50,5	181	60,1	188	62,5	278	92,4	131	43,5
			Authorized person	%	Insurance company rep.	%	County/ Judiciary rep.	%	Current physicians/ Nurses	%	Other	%
			123	40,9	16	5,3	40	13,3	180	59,8	3	1,0
			178	59,1	285	94,7	261	86,7	121	40,2	298	99,0

Table 4. Respondents’ recommendations on who should be the person(s) to reveal a patient’s medical related data in case a medical emergency happens (Sample size: 301)

One of the surprising elements of this list is that the majority of the participants do not agree (49.5% pro, 50.5% against) that the “husband/wife” should be disclosed the medical information of their patient, which is rather unexpected given that this person is, officially at least, the closest relative to the patient. Quite a few, but still many less than the majority considered “*authorized persons*” (40.9%), or the “*patient’s children*” (39.9%) or even the “*patient’s parents*” (37.5%) as those individuals to entrust with such sensitive personal information again despite the fact they are quite close to the patient.

Last, very few trust the authorities that is “*country and judiciary authorities*” to open this record (13.3%), even fewer would suggest the “*first grade relatives*” other the husband/wife, patient children and parents (7.6%) and a negligent 5.3% of them regard the “*insurance reps*” as fit for this task. Closing the list almost all the participants would disregard any “*other*” person (1%). All these aforementioned statistics present the difficulty of the respondents to trust other individuals and reveal to them such very sensitive information contained in the electronic health record.

5.5 Benefits expected from the implementation of the plan

Clearly the respondents see the implementation of the plan for the development of the patients’ health record as quite beneficial (table 5). Almost all (91%) believe it will “*improve the services provided to the patients*”. The vast majority also see that the implementation of the patient’s personal health record will “*make medical processes independent of place of time*” (85.7%) thus allowing the individuals to get the appropriate medical or nursing treatment regardless of the exact location they happen to be at any specific time.

Answer	Improved services to patients	%	Reduced need to visit health centers	%	European Insurance card is beneficial	%	Automatize and protect medication processes	%	Improved patients' self-control and feeling of safety	%	Make medical processes independent of place and time	%
Yes	274	91,0	225	74,8	245	81,4	250	83,1	210	69,8	258	85,7
No	27	9,0	76	25,2	56	18,6	51	16,9	91	30,2	43	14,3

Table 5. Respondents’ view of the benefits of implementing the patient’s personal health record (Sample size: 301 respondents)

They agree that it will “*automatize and protect the medication processes*” limiting possible and most likely hazardous over prescription of medical drugs from medical doctors (83.1%) to the benefit of both the health system of the country but the patient’s finances as well. They regard the plan for the realization of the “*European Insurance card*” as beneficial for the E.U. citizens (81.4%), expect that the whole project will help “*reduce the need to visit health centers*” (74.8%) with whatever that means for the workload of those organizations and their medical and nursing personnel and assume it will provide “*improved patients’ self-control and feeling of safety*” (69.8%).

5.6 Concerns regarding the protection of the EHR (Electronic Health Record)

The aforementioned constitute only one side of the story but there is the other side as well. Beyond the theoretical outcomes of the plan, which seem to be quite beneficial for the common good, there are various technicalities that need to be clarified whether they happen to be accepted by the public or not. The respondents were asked to suggest possible concerns directly or indirectly associated with these technicalities that might cause a failure of the plan. Their opinions appear in table 6.

First, the respondents are definitely aware (85%) that it is not technically feasible to “*absolutely secure the patient’s personal health record*” since the information and communications technology is not able to provide such guarantees. Moreover, they do realize (77.1%) that it is “*very difficult to find the best mean between most security and personal privacy*”. The vast majority of them acknowledged that the “*required personal physician is not yet a given for most residents in the country*” (77.1%).

Second, they are, also, afraid that the implementation of such a plan “*will open doors to authoritarian actions*” (73.8%) and it could even be “*against several moral, societal, political, religious beliefs*” (73.4%). As to the “*problem of selecting authorized receivers of the records besides the patients themselves*” the majority (69.4%) don’t see an easy solution to it. Furthermore, most expect that the plan will be beneficial only for the “*educated/trained and the financially independent individuals*”

(69.4%) implying that they fear it is meant for them basically. Lastly, to complete this dark side of the story more than two thirds of them (67.4%) project that it will “*increase criminal activity against vulnerable patients.*”

6. Discussion - Conclusions

There is a very well known “*circle of life*” for every innovative thought. First there is the innovation per se. Almost immediately the societies are looking into this idea more closely especially if it looks it is really worth it. A few experts suggest ways of realizing the idea in societies’ everyday life in an attempt to benefit from a large-scale application of it. Then, there is a “*hype*” on the issue as all those over-excited with the idea claim that without much effort, with little or no particular education of the populations, with very little funding, without any discussion with the several groups of people possibly involved directly or indirectly, there are huge benefits to gain from its application. Soon the decision makers, in most cases the politicians of the local societies, who are mostly ignorant about the idea and the related issues and problems, are usually drifted by their advisers and jump into rather quick decisions as to the implementation of the suggested ideas in their societies only to find probably sooner than later that regardless of the great potential of the idea things are not that simple. It has happened with most, if not all, greatest advances with one of the last in the information and technology sector being ecommerce and now it happens with the electronic health record and the electronic health cards.

Table 6: Respondents' view of the concerns of implementing the patient's personal health record (Sample size: 301)									
Answer	Absolute security of records is not feasible		Will open doors to authoritarian actions		Will increase criminal activity against vulnerable patients		Only good for the educated/trained and the financially independent		
Yes	256	85,0	222	73,8	203	67,4	209	69,4	
No	45	15,0	79	26,2	98	32,6	92	30,6	
	Problem selecting authorized receivers of the records besides the patients		Required personal physician is not a given yet		Plan is against several moral, societal, political, religious beliefs		Very difficult to find the best mean between most security and personal privacy		
	209	69,4	232	77,1	221	73,4	232	77,1	
	92	30,6	69	22,9	80	26,6	69	22,9	

Table 6. Respondents’ view of the concerns of implementing the patient’s personal health record (Sample size: 301 respondents)

It is at that mature stage that serious studies are contacted in order to see what are the possible negative implications and problems that might arise and how to overcome these problems. Many developed societies like Germany, the U.S.A., Australia, Canada, and a few others mainly in Europe but in other places in the globe as well are at this stage. There are important lessons to learn from their experience on the issue probably the most important been that this is too important of an issue to leave almost a third, or even more, of the population ignorant about it and most of its details. All the population will be required, not just asked if willing to do so, to be actively involved in the project. Therefore, everyone should be informed about it from the public local media and if necessary those more closely involved properly educated.

Then, there is this talk about the great vision of the realization of a European Insurance Card, later to be integrated to a Global Insurance Card system. This is also an issue of critical importance to leave it to quite possibly discredited speculations of what exactly it is and leaving room for opponents to demonize the whole concept taking advantage of the ignorance of the people. Open societies should not be afraid of having open discussions on ideas that for some might be “*taboo*”. The only negative result of such discussion might be to cancel the project if the societies are against it. However, it is more likely, the authors believe, through the open discussions to have the societies configure the details of how the specific mechanisms should work thus taking benefit from an excellent idea and plan like this one under study.

The previous comments/conclusions are further stressed by the fact proved in this study that despite the well expected basic personal information that the vast majority are willing to accept, including age, gender, name, height/weight, there are some more sensitive “*taboo*” elements which although the majority reject but quite a few seem willing to at least discuss and maybe even accept if they are properly convinced of the value of being included in the record, i.e. the education, race, religion, sexual preferences and income. There are also some barely rejected, namely place of birth, profession, marital status, nationality but not

without a dispute on the rejection by many. Moreover, during a possible discussion it would be quite useful to consider the ages, educational level, income level, and profession of the participants since they tend to affect the result especially as far as the second and third group of elements is concerned.

Concerning the medical information, and based on the actual statistical findings reported and analyzed in the respective section of the finding, the most important conclusion is that some medical information that would be thought of as quite important, like the “*patient’s medical doctor*”, are not highly respected to be included in the health record whereas others which are often neglected are strongly recommended from the participants. This might imply that, with the proper education of the masses of what exactly each suggested possible element is and how important it could be for the patient’s health record then even those elements that at first thought could be considered as “*unimportant*” or “*taboo*” might be among the first to be included. In other words, in such critical matters as the electronic health record prejudice should not characterize the decisions but the public should be allowed to have an opinion and contribute in the formulation of the respective mechanisms and their details.

As to the persons that should be authorized to disclose the patient’s personal health record the results are quite surprising indeed as seen in the relative section. What should be noted about this element is that the decision makers should seriously think the possibility to allow the patients to record the person they do trust enough to reveal such sensitive personal information of theirs. The decisions will most likely vary a lot and there is no need to have a uniform approach for all.

The participants almost unanimously “*saw*” all the benefits that the realization of the “*plan*” is supposed to bring together. From that viewpoint the “*message*” was properly and effectively communicated to the local residents from the government. However, the vast majority of them see, at the same time, all the risks that such an undertaking could bring on the societies. What is needed is to find viable, credible and trustworthy solutions to their concerns as much as that is technically possible and not cancel the whole plan, which is probably for the greater good.

Closing, whatever decisions are made from the authorities towards the realization of the plan they should consider a variety of parameters, most included in this research study some probably not, ranging from as reasonable for most people as those related to the society and the family finances to even the most radical, some would probably wrongfully say, like those related to politics, religious matters and the like. No parameter should be left outside or else the whole project could be put in jeopardy.

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