

The Internet and Health: Controversies and Opportunities

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Abstract

Searching for health information is one of the main Internet activities. Harris Interactive last survey estimates that over 117 million of U.S adults looked for health information in 2005, which means over 75% of population with internet access. In Spain, this percentage decreases to 28% (INE 2005).

The Networks huge formation possibilities join each other with a new health care attention model, where information access is one of the main activities that gives patients possibilities to take their own decisions about their health.

In the same way, new management models recognize preventive activities as highly cost-effective, and these interventions are also based on sanitary information and education as changing gears towards more healthy habits and preventive philosophy inclusion in all areas of human activities.

Nevertheless, the Internet sanitary information has serious problems. It is estimated that there are more than 4 billion web pages with medical contents and this number is increasing every year. More than half of those pages do not match minimum quality requirements like author or sources identification, date, or easy consultation to discuss this information with the doctor.

On the other hand, a serious lack of contents is found that matches the patients' needs. When patients have access to professionally-oriented information, with no criteria or filter, usually more problems and fears appear than the ones this information solves. This is due to the fact that the patient does not have the needed tools or knowledge to understand and comprehend the information if it is not given in an adequate environment

With all this controversy, it is indispensable to build tools that offer professionals the possibility to access and prescribe trustful sites with quality health information.

In the present article we tried to approach the phenomenon of the access online to the sanitary information on the part of the citizens, its importance and utility, but also the problems which one faces and the possible solutions to consider.

1. Introduction

The WHO, in Alma-Ata conference of 1978, when protesting the access to the health as a universal right, was not only considering its clinical or curative aspect but, fundamentally, the access of all to the prevention of the disease. Thus, it was understood that the prevention is one of the main activities - if not the main - of the sanitary professionals.

And within these activities, the indispensable tool is the sanitary education to ensure that, the individuals and the communities, become people in charge in the decision making on their health, and gain autonomy in the resolution of their problems.

Until a few years ago, patients did not have their own means to access to the sanitary information that interested them, and this information was given directly by the sanitary professionals. The new reality that the incorporation of Internet in daily life has supposed, and the instantaneous access to the information online, generates a different situation, and a different way to relate between patient and professional. Today it isn't rare that the patient looks for information in the Internet to complement and to extend what explains its doctor to him and, even, to discuss with this one the diagnostic options and the treatments available.

In addition it is undeniable that, in last decade, health has become a consumer product. Preventive activities and the healthful habits have been piercing in the thickness of the population, thanks to the efforts of the professional associations and the aid of media. Concepts like "cardiovascular risk", "cardiohealthy

habits" or "Mediterranean diet" have happened to thicken the daily heap.

Thus, at this moment the utility of sanitary information online is unquestionable, as a excellent tool for the sanitary education of patients and continuous formation of professionals. An educated health care consumer is likely to get better care. A "citizen-centered health system" that promotes health, requires informed patients capables to take their own decisions about his life [37].

"E-Health refers to the use of modern information and communication technologies to meet needs of citizens, patients, healthcare professionals, healthcare providers, as well as policy makers." This definition of e-Health was first developed in the e-Health Ministerial Declaration, 22 May 2003, and made during the 2003 e-Health Ministerial Conference.

Access to the best medical information available, as much for doctors as for patients, is singly one of the great ICT contributions [29]. Network groups, the new medicine education possibilities, the saving of time, the extension of the sanitary attention to any place and the changes in the relations between doctors and patients are other phenomena that show that the sanitary system is changing.

So, Internet users report two effects of online health resources: better health information and services, and different (but not always better) relationships with their doctors. Three-quarters (73%) of health seekers say the Internet has improved the health information and services they receive. Some online surveys respondents say that doctors are receptive to Internet research; others are cautioned to avoid any online health information [1].

However, beyond its potential, the effectiveness of health information online is not even well established in the case of the patients and, although the prevention strategies are theoretically feasible, face great problems putting them in practice. Still it has not been explored how the communication online can promote physical activity, healthful dietetic habits or quitting smoking [2] [36].

In addition, "democratization" of the information access has opened new possibilities, but it also generates new problems and incognitos relations, generally, to the quality of this information. We do not forget that not only can nearly everyone use the information, but publishing your own Web site is just as easy. This has resulted in an unprecedented proliferation of information sources on a global scale.

Searching for information has become more difficult, and the quality of search results is often disappointing. Web sites offering health advice abound; as shown by Google, currently the most

complete, which proposes over 4 billion (4×10^9) pages containing the word "health" (108 million 3 years ago), 1 billion mentioning the term "medicine" (20 million 3 years ago) and 136 million the term "salud".

In next text, we are going to exclusively approach the health information topic, leaving aspects like the electronic mail, the communication between health professionals and patients, the forums and spaces of interaction and other important emergent elements like health blogs, drugs commerce and the children in the Internet

2. The WWW of the World Wide Web: Who, What and Why access to medical information?

How many user are online?

Pew Internet Project surveys between January and June in 2005 show that 67% of the adult American population goes online, including 68% of men and 66% of women. But women slightly outnumber men in the internet population because they make up a greater share of the overall U.S. population.

Younger women are more likely than younger men to be online; older men are more likely than older women to be online: 86% of women ages 18-29 are online, compared with 80% of men that age. On the other hand, 34% of men 65 and older use the internet, compared with 21% of women that age [3]

Although very large numbers of Internet users conduct health searches, most do so infrequently. Eight of ten of those who have conducted health searches say they do so every few months or less frequently than that. Indeed, on a typical day, just 6% of Internet users look for health or medical information online (by contrast, 49% use email, 19% research a product or service, and 5% buy a product online).

In Spain, INE survey show that 31% population goes online in 2005, being 30% of homes with the Internet access (48% EU media) [4].

One of each two Spaniards has never used Internet, a percentage seven points superior to the European average (43%) according to the data of a study published by Eurostat. Only the 35 percent is connected weekly, as opposed to 40% in the set of the UE [5].

Who access to medical information?.

“Health seekers” are Internet users who search online for information on health topics, whether they are acting as consumers, caregivers, or e-patients [3] While everyone agrees that the number of health seekers is rising, the way to establish that number is a controversial matter.

In USA, Harris Interactive calculated that 117 million adults have looked for health information on the Internet, compared to 111 million in 2004, 109 million in 2003 and 110 million in 2002.

But there have been no epidemics reported of Internet users rushing online for health information. The global percentage of internautes interested in the health information in the last three years has descended to 72% of all those who are online (74% in 2004 and 78% in 2003). 61% users of Internet between 18 and 34 years has consulted information of health in the network in the last 12 months, as opposed to 7.1% that it has preferred to resort to a specialist. Although the number descends as increases the age, 21.4% of the internautes greater of 65 years resorts to the network to inquire on health subjects, as opposed to 20.9% that it continues consulting doctor [6].

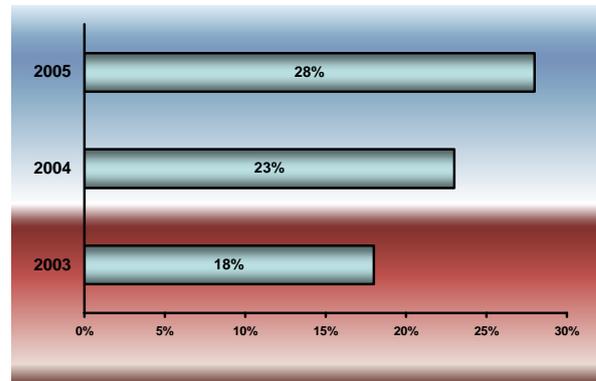
March 2004 demographic data from Hitwise revealed that most of the visitors to health and Medical Information web sites were higher earning 35 to 44 years old females who accessed the Internet from home.

In Spain according to the last survey of the INE [7], 28% of users of Internet it has consulted information on health in the last 3 months, which represents an increase of 6% with respect to the 2004 (figure 1). Of them, 23% have between the 15 and 24 years (figure 5). The internaut population greater of 65 years than has been interested in health subjects in the network is practically nonexistent (0,27%).

Main number of the Internet users and health-seekers are between 25 and 34 years. Women online search health information more than men (30,9 vs 25,8, figure 2). 34% of online users between 35-44 years, search the web for health information in last tree months. A higher educational level correlates a higher search for health information (figure 3). So, Housewife and pensioners online are the two groups with highest percentages of health-seekers (figure 4).

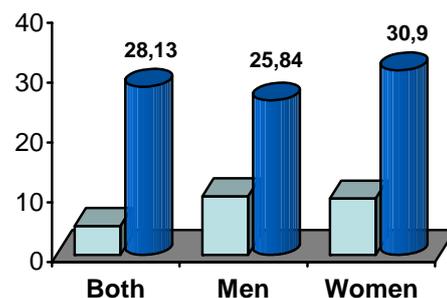
The consultation of health information percentage, from the point of view as large of city user, does not offer statistically significant differences from greater populations of 20,000 inhabitants, locating itself in values around 29%, descending these numbers to the 26 for populations between 10,000 and 20,000 inhabitants, and 23% for populations smaller to 10.000.

Figure 1. Spanish Health-Seekers of all those online, years 2003-2005.



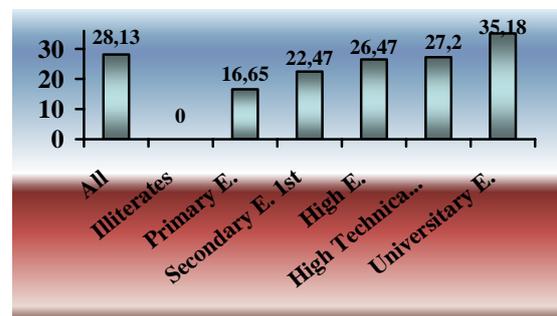
Source: SIBIS 2004, INE 2003 & 2005

Figure 2. Spain: Percentage of the Internet users that search for in the last three month health information of whole population and online population, by gender.



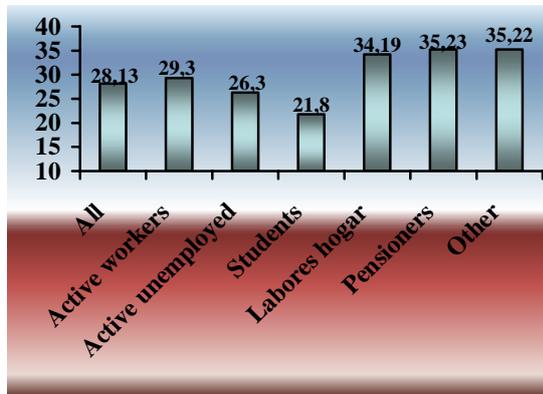
Source: INE 2005

Figure 3. Percentage of Internet users searching for health information last three months of all online users, by educational level



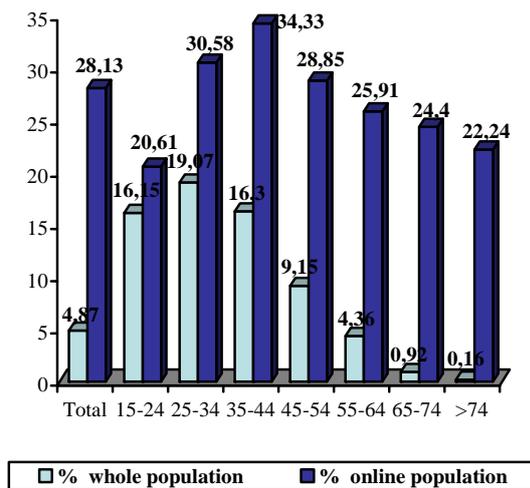
Source: INE 2005

Figure 4. Percentage of use Internet to search for health information last three month of all online users, by work situation



Source: INE 2005

Figure 5. Percentage of Internet use searching for health information last three month of all and online users, by age groups.



Source: INE 2005

What information is sought?

In USA, recent surveys about thematic preferences of the Internet seekers offers that 44% of Internet users have searched online for information about diet, nutrition, vitamins, or nutritional supplements; 36% have searched online for information about exercise or fitness. Internet users between the ages of 18 and 29 are the most likely to have searched for this last topics of information – 51%, compared to 35% of 30-49 year-olds, 28% of 50-64 year-olds, and just 13% of Internet users age 65 or older.

34% users have searched online for information about prescription or over-the-counter drugs .25% have searched online for information related to health insurance.

80% internet users have looked online for information on at least one of 16 related health topics, with increased interest since 2002 in diet, fitness, drugs, health insurance, experimental treatments, and particular doctors and hospitals.

Some demographic groups showed notable interest in specific topics – 59% of online women have read up on nutrition information online, for example, compared with 43% of online men. Thirty-eight percent of online parents have checked online for health insurance information, compared with 26% of internet users who do not have children living at home [3] .

In Spain we do not have trustworthy data on the main topics consultation online. An approach has been made from the UOC from the main topics boarded by spanish webs of health emphasizing anxiety, cancer, pregnancy and AIDS like the items more repeated [8].

Why users seek health information?

Main activities of Internet users about health are to research a diagnosis or prescription, prepare for surgery or find out how best to recover from one, get tips from other caregivers and e-patients about dealing with a particular symptom, give and receive emotional support and keep family and friends informed of a loved one's condition.

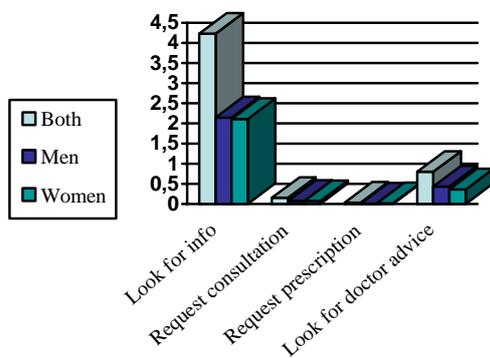
47% of Internet users have at some point searched online for information about a certain medical treatment or procedure. 63% of Internet users have at some point looked for information about a specific disease or medical problem. 44% of Internet users have searched online for information about diet, nutrition, vitamins, or nutritional supplements. Some of these searches are certainly for weight management. 57% of those who recently conducted searches did so on behalf of someone else — a spouse, child, friend, or other loved one — not for themselves.

Main groups of the Internet seekers are parents, women, healthy people, and the middle aged between 30 and 49 years old. In addition, there is a small group of Internet users who are living with a disability, handicap, or chronic disease or who take care of someone living in their household

Caregivers who live with someone who is chronically ill or disabled, a group of searchers who make frequent use of the Internet for health issues, are particularly likely to have searched for information about a specific treatment – 62% have done so.

Some demographic groups showed notable interest in specific topics – 59% of online women have read up on nutrition information online, for example, compared with 43% of online men. Thirty-eight percent of online parents have checked online for health insurance information, compared with 26% of internet users who do not have children living at home. Forty-one percent of internet users with a broadband connection at home have looked up a particular doctor or hospital, compared with 19% of internet users with a dial-up connection at home [10].

Figure 6. Spanish health seekers by type of activity and gender

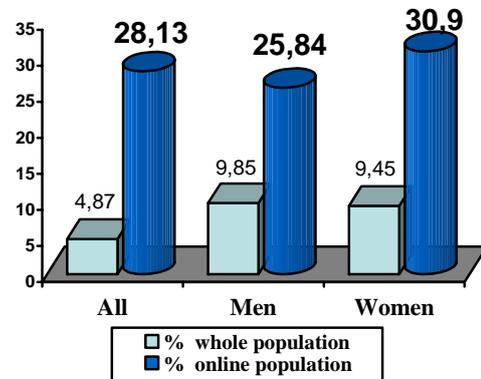


Source: INE 2005

Parents are a specific proactive group of the Internet searches. So 38% of online parents have checked online for health insurance information, compared with 26% of internet users who do not have children living at home. Mothers are more active in the information search. 71% of the connected mothers have looked for information on subjects of health for their children in the last month [3][10]. Taking in consideration gender differences women are significantly more likely than men to look for general health and medical information, as well as information on specific diseases or medical conditions, treatments or procedures. They also are more likely to look for support groups to communicate with for diseases or conditions, to search for information on diet and nutrition, on how to quit smoking, and on mental health issues, including depression, anxiety, and stress [1].

In the ranking of the 10 first associations and Spanish medical organizations in Internet in 2004, three of them are pediatrics associations, occupying the first position the Asociación Española de Pediatría (AEP) [4].

Figure 7. Percentage of Internet use to search for health information last three month of all and online users, by gender.



Source: INE 2005

3. Health information online: opportunities

A citizen-centred medicine requires informed citizens, able to freely make decisions on own their health. Internet provides an ideal media to receive information on healthful habits of life, recommendations on prevention and, handling of the disease or knowledge of first aid.

Their main advantages are:

Accessibility to information: one of the most important aspects of online health advice is the fact that it is available at any hour of the day or night, from wherever users are able to log on.

Instantaneously, because the Internet users don't have delays or reserves to access the information.

The use of Internet and the information retrieval are comfortable and, after a small training, easy to do.

Connectability (interaction space). Internet offers new possibilities of interaction with other users and professionals. To send and to receive information, to participate in forums and to relate to users and professionals were hardly attainable activities until the arrival of Internet.

Personalization: allows consumers to customize the portal interface and information preferences and allows the portal to individually target consumers.

Anonymity it is important that Internet users can get health information anonymously.

The Internet offers the possibility of obtaining the newest and updated information

4. Health information online: controversies

The theoretic advantages of health information currently access online has important problems unsolved. These problems are limiting as the capacity of access to the information and like the effectiveness of the information for the education and information of the patients.

4.1. Accesibility and usability.

In firstly, the Internet does not reach all places and, when it does, it does not offer the same speed of access. More than 70% world population have no access to a telephone line. In Spain number of Internet connections through ADSL lines has increased during the last years. Nevertheless, this advance is not significant either if we compared it with the rest of the european countries of the 15, where Germany maintains the leadership with 6,700,000, as opposed to the 2,583,000 of lines in Spain at the beginning of the year 2005 percentage [11]. If we express that in percentage data, 25% Spanish homes have broadband access (23% EU media).

In addition, users conditions often limit their capacity of access to the information online. A great number of patients have special necessities, they are physical, cognitivas or, simply, educational.

Rising demand for health and social services, due to an ageing population and higher income and educational levels. In particular, by 2051, close to 40% of the European Union's population will be older than 65 years old. At this moment, In Spain there are more than 19 million chronic patients, of whom more than half they are greater of 65 years.

As we can see, elderly people constitute a growing group of computer users and information seekers on the Internet. Furthermore, the elderly are a big consumer of healthcare services, and the Internet can offer unparalleled opportunities to adquire health information. From the viewpoint of health professionals, the opportunity to reach this largely unwired population is increasingly recognized. Indeed, more initiatives are being put into place in order to ease seniors into Internet use and to give them the means of access. Technical adaptation to ageing changes is necessary for better usability. Additionally, cognitive, psychological and social factors are just as important for optimizing access and usage of computers by the elderly population [12].

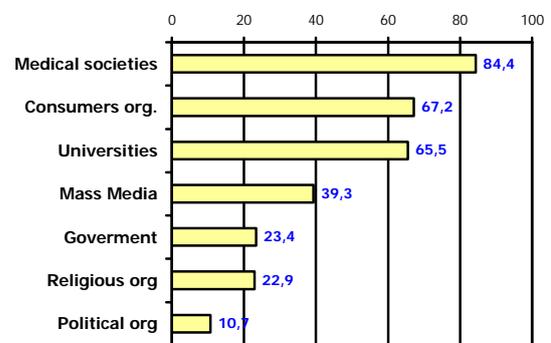
4.2. Quality and pertinence of information.

Not only can nearly everyone use the information, but publishing your own Web site is just as easy. This

has resulted in an unprecedent proliferation of information sources on a global scale.

On the other hand, a serious lack of contents is found that matches the patients' needs. When patients have access to professionally oriented information, with no criteria or filter, usually more problems and fears appear than the ones this information solves [33]. This is due to the fact that the patient does not have the needed tools or knowledge to understand and comprehend the information if it is not given in an adequate environment. Information must be comprehensible and must be written in "Plain language".

Figure 8. What sources of information truths european citizens?



Source: Eurobarometer 58.0 (2003)

The access to information does not guarantee its utility or its understanding. Low health literacy limits many Americans' ability to understand what is available online. It is necessary to adapt the information to the different profiles of users to make this comprehensible without losing rigor and veracity. This is one of the greater difficulties for scientific communication in general, and education for the health in individual. Finding relevant information and ascertaining its trustworthiness creates two inseparable concepts necessary for the Web to flourish as an unprecedent source of knowledge and continue in helping ill patient or citizen to stay healthy. Consumer health information should be written with a comprehensible reading level

4.3. Credibility

According to the Eurobarometer 58,0 (2003) citizens consider the trustworthy sources of health information the medical societies (84,4%), organizations of consumers (67,2%) and universities

(65,5%), in front of mass media (39%), government sources (23,4%) and politic organizations (just 10.7%).

4.4. Training.

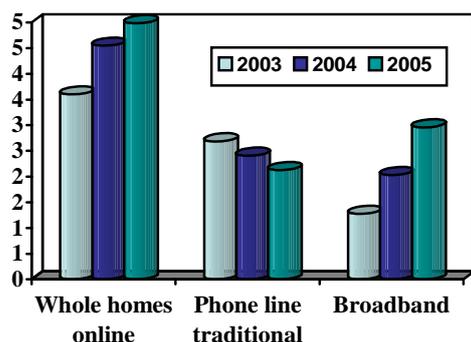
The Internet is characterized by the excess of information and its chaotic organization. To find pertinent information requires training.

4.5. "A new religion": Absolutely truths, solution for whole problems, virtual substitute...

In the health field, "news frequently transmits to their public a vision absolutely distorted. For the reader, the viewer or the listener with little medical training, that is to say, for the immense majority, thanks to mother cells the Parkinson, the diabetes or the Alzheimer is going to shortly be cure. Those that create and spread these false illusions carry a heavy responsibility; on the one hand they favor the unreliability of the medical research if the created hopes are not materialized and, more importantly, they create an irresponsibility when originating the illusion that investigation research will solve all health problems and that does not matter to smoke, to be obese, or, in general, to behave in an aggressive way for own health[13].

In addition, users must accept the considerable discrepancy ('asymmetry') in knowledge between themselves and health professionals. It is difficult to transmit that the medicine is not an exact science but a "statistical science".

Figure 9. Home Internet connection in Spain by kind and year



Source INE, Ministerio de Industria

4.6. "Cybercondriacs".

The great consumer of information has a certain profile. He does not access information who most

needs it. The healthy patient usually does not perceive a necessity of information (primary prevention) except in case they must use it for some reason (caretakers, relatives of patients, mothers).

Although the total number of adults who have looked for health information online have decreased, the frequency with the North American users consult webpages that offer health contents increases. Thus, 58% of the interviewed people who have access to Internet recognize that it looks for this class of information "some times" or "often", as opposed to 50% that have consulted this information the past year. Thus, adults who now look for medical information or sanitary cares do more assiduously than in previous years. A 89% affirm that it has been successful and have found in the Web the medical data that they looked for. In addition, 90% of them consider that the information that has consulted is trustworthy. Survey also indicates that most of the internauts (57%) have discussed at least once the information found in the cyberspace with his doctors and 52% have gone to the network after having spoken with the doctor [24] [43].

Table 1. Frequency Of Accessing Health Information Online: 1998-2005.

%	1998	1999	2001	2002	2003	2004	2005
Often	12	13	16	18	17	19	25
Sometimes	30	30	30	35	37	31	33
Hardly ever	29	31	30	27	23	24	14
Never	29	26	25	20	22	26	29
Total who have looked for health or medical information sometimes or often	42	43	46	53	54	50	58
Total who have ever looked for health or medical information	71	74	75	80	78	74	72

Source: Harris Interactive

5. Finding solutions

All cited troubles, must be resolved to find trustworthy health information, capable of being used by patients and promoting their own health [40].

5.1 Accesibility

The European Commission has been active in establishing quality criteria for Health related websites [17] and accessibility of web sites [18]. Patients who seek online health information may have a variety of physical impairments, and its important to develop resources that are usable by individuals with disabilities. The Web Accesible Initiative (WAI) and the spanish UNE 139803, provides guidelines for assuring broad accesibility to Internet Based Information.

5.2 Trust-Building measures

Self-regulating policies.

They are the rules and guiding principles a health site follows with respect to privacy, security, editorial, and advertising. Their main problems are that often are posted as footnotes –so consumers may be unaware of their existence-, they are self-proclaimed, and are not standardized [30].

Third part seals.

The accreditation of portals, directions and other resources of free access through Internet has a main importance, that they make like a control mechanism on the heterogeneous nature and quality of information that is offered; and although the studies made on the guidelines of the users emphasize the lack of valuation that the internauts grant to these instruments [1] the measurable quality in the health pages based on formal aspects as well as the pursuit of ethical commitments and rigorous codes of conduct. The organisms in charge to credit these aspects make a meticulous pursuit of the Web pages, reason why the obtaining and maintenance of their accreditations guarantee the visitor the quality of contents, authority, transparency and honesty of the emitter of the information.

They remedy some of the drawbacks associated with self-regulation policies. The Webs Médicas de Calidad project, Health On the Net Foundation, Trust, URAC and Hi-Ethics are the five main health related seal programs.

WMC Project is an inter-institutional initiative with an important presence of scientific Iberoamerican organizations (TSB, AEP...) that looks for rigorous accreditation of the Internet resources, from an ethical and usability perspective.

The number of certified resources of health has a marginal character in relation to the total volume of resources to which the users can access. This inevitable risk, associated with the nature of Internet, is reinforced by the fact that the popular sites are not, necessarily, those credited or that they count on the endorsement of sanitary institutions [1].

“Accredited” search engines

The search engines, on the heels of the Web, realized that they have a real stake in making sure the results of their searches are relevant, reliable and trustworthy. Some search engines (not specialized) promoting trustworthy health and medical sites such as Kosmix.com, mamashealth.com, Webmd.com and Healthline.com which “all sites that have been

accredited by online Web ethics committees like the Health on the Net Foundation.”[14].

5.3 "Internal" quality

Quality of the health information circulating in Internet and, more concretely, of the one directed to patients, is not a new subject. Periodically, in various cases, it is necessary to use tools that allow patients and professionals to access health information that is guaranteed as far as quality, veracity and updates. The patients do not have the abilities nor knowledge necessary to face, on their own, single they, the present health information in the network. It is necessary to implement tools that facilitate the detection and the access to the sites with reliable information, so that the doctor can prescribe Internet with tranquillity. To date, they have not been able themselves to introduce initiatives that solve the problem completely. This is due to the high complexity in generating information of quality directed to patients, as well as the tremendously laborious and expensive task of certifying each one of the generated contents. In this way, good intermediate solutions have settled down, as they are to credit the quality of the emitting sites of the information. To this the more important ethical seals in our means are dedicated (HON, pWMC, COMB). These accreditations are based on the verification of the ethical and formal commitments of the pages with sanitary information [35]. This quality or external validity, does not always assure quality. However, the quality information (based on scientific evidences, updated, adapted to the understanding of the end users) exists and it circulates in the network. This information is mainly generated and supported by independent scientific societies and public health services, and is made up of recommendations, description of diseases, information on preventive activities and habits, etc.

Trust sources.

By using high-quality sources, a health site can demonstrate it has the ability to gather, organize, and present quality health information and add value for consumers. If consumers trust most of the sources used by a health portal, they are likely to transfer that trust to the portal itself.

The contributed contents, as much the practical advice, recommendations, the news or articles, are based on the scientific information of greater rigor available. This is obtained using as its base the sources of intelligence of greater prestige on the international landscape:

Cochrane Library: Organism without profit whose purpose is to elaborate systematic and updated revisions of clinical tests on the sanitary interventions and, when these are not available, revisions of the trustworthy evidence but derived from other sources, in order to help make informed clinical and sanitary decisions good.

Medline plus: National Medicine Library and the National Institutes of the Health of the U.S.A. webpage with health information for patients.

Other sources: scientific publications, scientific societies, international institutions, consensus documents, etc.

Proposals: a patient virtual library.

A reference site to obtain trustworthy health information for citizens who consume as well as for professionals who must provide it .

This site characteristic must be:

- Access to credible and comprehensible health information
- Evidence based information
- Documents offered by prestigious organizations
- User friendly and accessible tools
- Free log in
- Pattern standard defined by BIREME-PAHO/WHO

6. Conclusions.

The new technologies in general, and the Internet have contributed to the appearance of a new reality in Health. The appearance of the third space makes possible, in our scope, new solutions to old problems but, as well, it generates new controversies and unknowns.

Both as patients and as healthy citizens, people can benefit from better personal health education and disease prevention. They need support in managing their own diseases, risks and lifestyles. A growing number of people are looking proactively for information on their medical conditions [15]. They want to be involved actively in decisions related to their own health, rather than simply accepting the considerable discrepancy ('asymmetry') in knowledge between themselves and health professionals. e-Health services provide timely information tailored to individuals in need. Specialised online resources are available for health education [16], and lifestyle management. Overall, 73% of health seekers say the Internet has improved the health and medical information and services they receive [1].

To access this information creates many advantages, but also it generates problems and

questions not yet solved. Diverse strategies are directed to diminish the pernicious effects of the access online to the information. Among them, they emphasize certificates of quality and the explicit systems of autocontrol. However, these valuable tools are not able to discriminate the concrete quality of the information, coming in through the valuation of their content. Therefore, is essential the development of new tools that allow for the reliable use of the information online by citizens and professionals. Citizens, because the information is directed toward them, and professionals because they are who must prescribe this information in a customized form. In this sense, the creation of a virtual library for patients, with information certified by ethics and scientific reliable emitters, would create an important landmark in the access to sanitary information of quality.

7. References:

[1]Fox S, Fallows D. Internet Health Resources. Pew Internet & American Life Project July 2003. Available in: http://www.pewinternet.org/pdfs/PIP_Health_Report_July_2003.pdf . Download 4 April 2006.

[2]Casino G. E-prevención. Jano. 21 mayo 2004. Available in <http://db.doyma.es/cgi-bin/wdbcgi.exe/doyma/pescepticemia.plantilla?pident=2357>. accedido 28/06/2004

[3]Fallows D. How Women and Men Use the Internet . Pew Internet & American Life Project Dec 2005. Available in: http://www.pewinternet.org/pdfs/PIP_Women_and_Men_online.pdf. Download 4 April 2006.

[4]eEspaña 2005. Fundacion Auna. 2005

[5]Ottens M. Use of the Internet among individuals and enterprises . Eurostat European Communities, 2006

[6]Greenspan R. Net attracts Health-Seeking Surfers. ClickZ stats Healthcare. 2004. Available in: <http://www.clickz.com/stats/sectors/healthcare/article.php/3339561>. March 2006"

[7]Blanco J. Doctor Internet. Jano 2006; **1593**; 25.

[8]Valiente Barros I, et al. La psicología de la salud i de la qualitat de vida en la societat de la informació y del conoiximent (PSINET). UOC 2002.

[9]Baur, C. The Internet and Health Literacy: Moving Beyond the Brochure. In Schwartzberg, J.G., J. VanGeest, C.C. Wang (Editors). Understanding Health Literacy: Implications for Medicine and Public Health. Chicago: AMA Press, 2004.

- [10]Fox S. Health Information Online. Pew Internet & American Life Project May 2005. Available in: http://www.pewinternet.org/pdfs/PIP_Healthtopics_May05.pdf . Download 4 April 2006.
- [11]Sociedad de la información en España 2005. Fundación Telefónica. 2005. Available: <http://sie2005.tpiedita.es/datos.html>
- [12]Vastag B. Easing the elderly online in search of health information. JAMA 2001; **285** (12); 1563-6
- [13]Valtueña JA. Esperanzas frustradas y temores infundados. Jano 2005; **1577**; 14.
- [14]Vascellaro JE. New Engines Focus on Content From Select Medical Sources, Not Just Broad Lists of Links. Wall Street Journal 21 March 2006
- [15]Detmer, D.E., P.D. Singleton, A. Macleod, S. Wait, M. Taylor, and J. Ridgwell (2003), *The Informed Patient: Study Report*, Cambridge University Health, Judge Institute of Management: Cambridge, UK. March 2003.
- [16]The European Agency for Safety and Health at Work offers a wide range of web resources on accident and diseases prevention and guides of best practices for both employers and employees. Available: <http://europe.osha.eu.int/>.
- [17]Communication on eEurope 2002: Quality Criteria for Health related Websites Available http://europa.eu.int/information_society/eeurope/ehealth/index_en.htm
- [18]COM 529. eEurope 2002: Accessibility of Public Web Sites and their Content.. 2001 Available: http://europa.eu.int/information_society/topics/citizens/accessibility/web/wai_2002/cec_com_web_wai_2001/index_en.htm
- [19]Ávila JF, Portillo BE, Pajares JM. Calidad en la información biomédica existente en Internet. Aten Primaria 2001; **28** (10): 674 – 679.
- [20]Llorca E (Dir). Los valencianos en la Sociedad de la Información. Perfiles Sociotecnológicos de la Comunidad Valenciana 2005. Cevalsi, Fundación OVSI 2005
- [21]Barca Fernández, R y cols (2004). La información al paciente y su participación en la toma de decisiones clínicas. Aten Primaria 33(7):361-7
- [22]Cáceres S. La evolución de los contenidos en Internet. Fundación Auna, Observatorio de la S.I. 2004; 7.
- [23]Castillo Garzón, M.J. (2004). Comunicación: medicina del pasado, del presente y del futuro. Rev Clin Esp 204 (4)181-184
- [24]Greenspan R. Cyberchondria is Spreading . Clickz.com May 30, 2002 . Available: <http://www.clickz.com/stats/markets/healthcare/article.php/1151011> Descargado el 31/05/04
- [25]Eysenbach G, Powell J, Kuss O, Sa ER. Empirical studies assessing the quality of health information for consumers on the World Wide. A systematic review. JAMA. 2002; **287**: 2691-2700.
- [26] Fox S, Fallows D. Internet Health Resources: Health searches and email have become more commonplace, but there is room for improvement in searches and overall Internet access. Pew Internet & American Life Project. 2003. Available in: www.pewinternet.org/reports/
- [27]Gagliardi, A, Jadad, A. Examination of instruments used to rate quality of health information on the internet: chronicle of a voyage with an unclear destination. BMJ 2002; **324**: 569-573.
- [28] Greenspan R. Health Insured Wary Of Online Privacy . Clickz.com September 15, 2003. Available <http://www.clickz.com/stats/markets/healthcare/article.php/3077551> Descargado el 31/05/04
- [29]Jadad, R. B. Haynes, D. L. Hunt, and G. P. Browman. The Internet and evidence-based decision-making: a needed synergy for efficient knowledge management in health care. CMAJ 162 (3):362-365, 2000 Available: <http://www.cmaj.ca/cgi/content/full/162/3/362> (accedido 05/02/05)
- [30]Margaret A. Winker; Annette Flanagan; Bonnie Chilum; John White; Karen Andrews; Robert L. Kennett; Catherine D. DeAngelis; Robert A. Musacchio Guidelines for medical and health information sites on the Internet: principles governing AMA Web sites JAMA 2000 Mar 22/29; **283** (12)::1600-1606. Available: <http://jama.ama-assn.org/cgi/content/full/283/12/1600>
- [31]Melamud, A.. Descontrol virtual: Los niños e Internet. CampuSalud 2005. Reportaje. Available: <http://www.campusred.net/campusalud/profesional/xTras/imprimible.asp?e=Reportajes&id=75> . Acceso Martes, 27 de diciembre de 2005.
- [32]Melamud, A.. Internet y las Nuevas Tecnologías para la Salud. CampuSalud 2005. Reportaje. Available : <http://www.campusred.net/campusalud/profesional/xTras/imprimible.asp?e=Reportajes&id=73> . Acceso Martes, 27 de diciembre de 2005.
- [33]Mira, J.J.; Pérez-Jover, V; Lorenzo, S. (2004). Navegando en Internet en busca de información sanitaria: no es oro todo lo que reluce. . . Aten Primaria 33(7):391-9

[34]Ramos Martínez, A y cols. (2004). Consultorios médicos por internet: principales motivos de consulta y diferencias con la Atención Primaria. *Rev Clin Esp* 204 (4) 198-201

[35]Mayer MA. Acreditar webs de contenido sanitario: ¿una necesidad imposible? *Med Clin (Barc)* 2001; **116**: 496 – 497.
Purcell GP, Wilson P, Delamothe T. The quality of health information on the internet. *BMJ* 2002; **324**: 557-558

[36]Smith R. Almost no evidence exists that the internet harms health. *BMJ* 2001; **323**: 651.

[37]Nutbeam D, Smith C, Catford J. La evaluación en la Educación para la Salud. Una revisión de sus Progresos, posibilidades y Problemas. En: OPS/OMS. *Promoción de la Salud: una antología*. Publicación científica N° 557; 1996.

[38]Powell J, Clarke A. The WWW of the World Wide Web: Who, What and Why?. *J Med Internet Res* 2002, 4: e4

[39]Valerio M. Cuatro de cada diez internautas confían más en la red que en su médico. *El Mundo Salud* 15 April 2004. Available:
<http://www.elmundo.es/elmundosalud/2004/04/15/oncologia/1082051483.html> Access 11/30/2004

[40]Wilson P. How to find the good and avoid the bad or ugly: a short guide to tools for rating quality of health information on the Internet. *BMJ* 2002; 324: 598-602

[41]Baker L, Wagner TH, Singer S, Bundorf M K .Use of the Internet and E-mail for Health Care Information. Results from a National Survey. *JAMA* 2003; 289: 2400-2406.

[42]Luo W, Najolawi M. Trust-building measures a review of consumer health portals. *ACM* 2004; 47(1): 108-113.

[43] Harris Interactive. Number of Cyberchondriacs The Harris Poll 54, July 15 2005. Available http://www.harrisinteractive.com/harris_poll/printerfriend/index.asp?PID=584

[44]Fundación Telefónica. La sociedad de la información en España. Telefónica S.A. 2005.

[45] INE. Encuesta de tecnologías de la información en los hogares. INEbase 2005. Available :
<http://www.ine.es/inebase/cgi/um?M=%2Ft25%2Fp450&O=inebase&N=&L=>