New tendencies in health and medical websites

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1. Introduction

Information on medicine and health has been made much more accessible from all fronts in the new information society. That is, more accessible to viewers, or the public: the informants and speakers, as well as the members of the medical and scientific community themselves.

However, the accessibility for the public, the speakers and the scientific community comes with another problem: the avalanche of information.

In this paper we take the Internet's avalanche of information into consideration from various points of view. For the media, this phenomenon grows in importance daily.

The availability of information through digital resources on topics concerning medicine and health is growing. However, not all of the resources available online are trustworthy sources, making it necessary to establish some quality control standards for them. Now we can find a situation in which quality information is displayed side by side with inexact information.

In this sense, we can affirm that the ICT (information and communication technologies) has facilitated the information explosion in a framework where high quality information from recognised, solvent and credible people, groups and institutions are displayed along with imprecise, incomplete, non-peered review, non-vigorous, and even purposely erroneous information [1] .

Digital resources that the medical profession has access to are also accessed by the media and public opinion. Information that offers these digital resources are accessible to all of the scientific community.

2. The written press is better

Without a doubt, written medical and health studies offer much more encouraging conclusions.

The Quiral Report confirms that medical and health information in Spanish periodicals has experienced a slight increase in quality. According to its 2004 edition, less texts have been published since the previous years edition, but they are now more in depth and committed [2] .

The analysis of 11,021 medical and health related texts published in 2004 indicate a stabilisation in the number of texts published, a general tendency since 1998, with an increase in more elaborate reports. The topics highlighted are the aviary flu alert, the public healthcare system's finances, and the debate on stem cells and cloning; as well as on the malaria vaccine, which has been selected for the case study due to its great social repercussions.

The complexity of some health topics foresees"new challenges for both investigators and editors

and writers of periodical information on healthcare and medicine."This is why the report's authors pose the need for a greater commitment on behalf of everybody in creating quality work without distancing itself from the reader.

In 2004, journalists cited their sources more often in their reports:from 48% in 2003 to 59% in 2004. However, there are still many texts which only offer one source (2,782).

3. Why identify trustworthy sites

In reality, except for specifically created groups, the majority of Internet users and viewers with an average education lack the criteria to properly select medical and health resources on the Internet. Medical groups have promoted various systems to foment the proper use of clinical information. However, they all start from the idea that the pending challenge is to maintain the level of rigor and quality in the digital resource's content and architecture, since these resources are voluntary and used on an individual basis.

Internet simplifies searching for information while also being an easy to use tool. This is beside the continual existence of content, as we mentioned earlier.

It is well known that resources on the internet are increasing at an amazing pace. According to World Health Organisation report, there are currently 10,000 health related web pages. The American Editors Federation estimates that more than 85,000 articles, editorials, reports, news, etc. relative to the health world are viewed every day. Moreover, about 400 million people in the world view, read or listen to some news pertaining to health, while specialised magazines publish more than 1,000 articles a day.

Recent data presented by Dr. Miguel Angel Mayer [3] , Director of the *Web Médica Acreditada* , (a web quality accreditation system) explains:

"We are up against an exponential increase of healthcare information on the Internet: looking up "health or *salud* " in a search engine like Google we come up with more than 1,840,00,000 pages." The expert states that "more than 70%-80% of Internet users search for personal health information for themselves or their relatives" (30% in Spain, 35% in Norway, 22% in Japan or 14% of Hispanics in New York.)

The quality of this information on the Internet is debatable. In recent years we have seen the need to identify and evaluate a consensus in terms of the quality criteria to be used as a tool in determining the quality of a website. This requires the close collaboration between scientific societies and colleges and governmental institutions, along with the participation of consumer associations and patients.

Different institutions have developed criteria to guide and evaluate healthcare web pages, like the Health on the Net Foundation (HON), Food and Drug Administration (FDA), American Medical Association (AMA), Internet HealthCare Coalition, Hi-Ethics, MedCertain, etc., but these criteria have not been systematically applied on healthcare websites, both in the creation and evaluation process. What is more, many of these systems depend on the volunteer collaboration from people who created the website, which makes the validity and reliability of these evaluations difficult to establish.

As a private initiative in 2000, AMA established a set of principles that guide the standards that healthcare web pages should fulfil, with the final goal of guaranteeing the quality of the information contained in them. This includes content, publicity and sponsors, privacy and confidentiality and electronic commerce.

The criteria most often used in different initiatives are usually related to content, design and site aesthetics, listing authors, sponsors, updating information (including the frequency of updating and maintaining the website), citing sources, usability, accessibility and availability.

It is obvious that in the last five years there have been numerous methods appearing, from the institutional, professional or private sector. In fact, we now know of up to one hundred tools used to evaluate quality.

4. Health Metadata in XLM/RDF

The most consolidated project in the European area is called Quatro. It is posited on the vision of a semantic web that allows for the existence of trustworthy medical and clinical contents that the user can access. This is the product of expert collaboration and coordination between the following institutions:

- Coolwave. An e-Media company in the United Kingdom

- ECP.NL (Platform for eNederlands). Independent Users of the Internet Collective in Holland.

- ERCIM (European Research Consortium for Informatics and Mathematics). W3C in Europe.

- ICRA (Technical Coordinator). Internet Content and Rating Association, in the United Kingdom

- IQUA (Internet Quality Agency), In Spain (Barcelona).

- NCSR (The Greek National Centre for Scientific Research).

- Pira International (Project Coordinator). A prestigious United Kingdom publishing house.

- University of Milan (Department of Computer Science and Communication), in Italy.

- Web Médica Acreditada pertaining to COMB, as part of the Physicians College in Barcelona, in Spain and directed by Dr. Miguel Angel Mayer.

This system's goal is to create computer tools that could be integrated into Google or Yahoo search engines to allow the user check if the website is certified, using the tags or metadata system in XLM language, recognised by a server programmed for them.The possibility of using search engines through the development of browser tool bar applications was also suggested in previous scientific projects, based on the analysis of informative websites.

Quatro´s system is based on three control axes of information systems:

1. ViQ: A tool bar that recognises the presence of seals in the visited website, thus adding the appropriate icon to the browser.

2. LADI (Label Display Interface): A label viewing interface for search engine results noting the results within the engine.

3. QUAPRO: An intermediate application between ViQ, LADI and the Accreditation and Quality Authorities like: WMA, IQUA or ICRA. On the one hand it communicates with LADI OR ViQ, and with the labelling authority's databases as well, through its DAcc. QUAPRO receives

Internet URLs to evaluate and visits them to see if they have any information on the recognised seals.

The certified medical website is a system promoted by the Official College of Physicians of Barcelona (COMB) which grants a certification seal. This seal recognises minimum standards in medical practices, as well its information's quality and rigour.The permanent Committee supervises the fulfilment of the criteria, as well as granting or renovating the seal when possible [4] ..
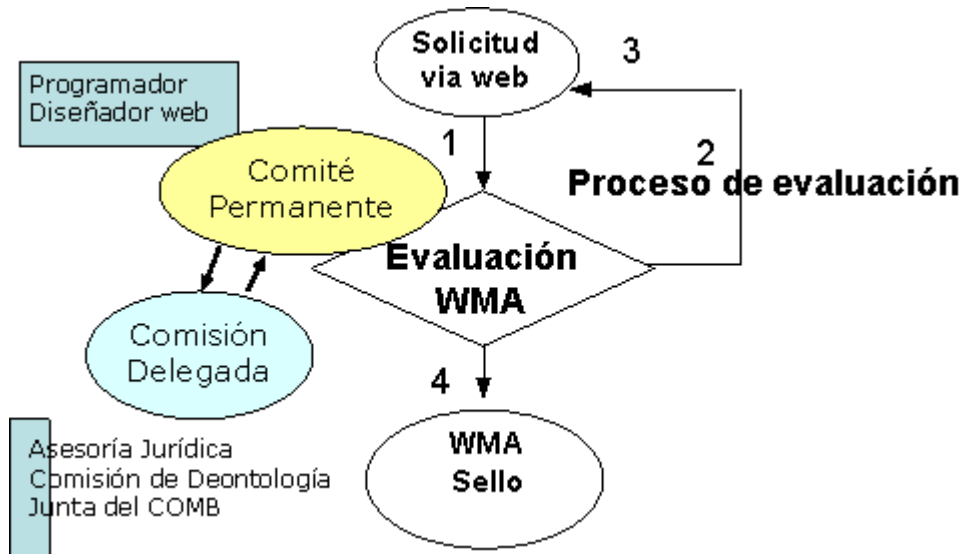
Figure 1. Certified Medical Website Seal (WMA): Certification Process

5. Trustworthiness: an essential aspect of quality

It is obvious that being trustworthy is essential for a healthcare website, whether its contents are scientific, technical or popular, like with a digital periodical or cyber media. If it is not trustworthy, it does not have a sufficient enough quality to be considered a useful healthcare site for the user. As a consequence, it is important that the certification be urgent and respond to the demands of the medical, scientific and general community.

With this in mind, it is important to create a viable computer mechanism, like tags, which the majority would benefit from as patients who use the internet to find solutions to our specific health problems. How many erroneous diagnostics, inefficient treatments and unfounded claims on diseases could it stop if the certification would be accepted by at least the main sites? And what economic benefit would result from it? It would also be the perfect filter for identifying entities, institutions or companies that offer non-scientific recommendations online, based on pseudo-scientific concepts and lacking the necessary vigour which could result as detrimental to a person's health. What is more, it is the patients, those with diseases, who most deserve quality information which is reviewed, safe and valid.

6. The profile of the internet user and browser for healthcare information

Who are the internet users in the European Union and Spain and how do they behave when confronting healthcare information?

Judging from the Eurobarometer survey [5] , only a small proportion (23.1%) of the European

Union's population use the Internet to find health related information. In fact, Spain is ranked in second last place in the EU for health searches. (In Denmark, Netherlands, Sweden, Finland and Luxembourg the percentages are 41.4%, 38.7%, 33.5% and 32.4% of the population).

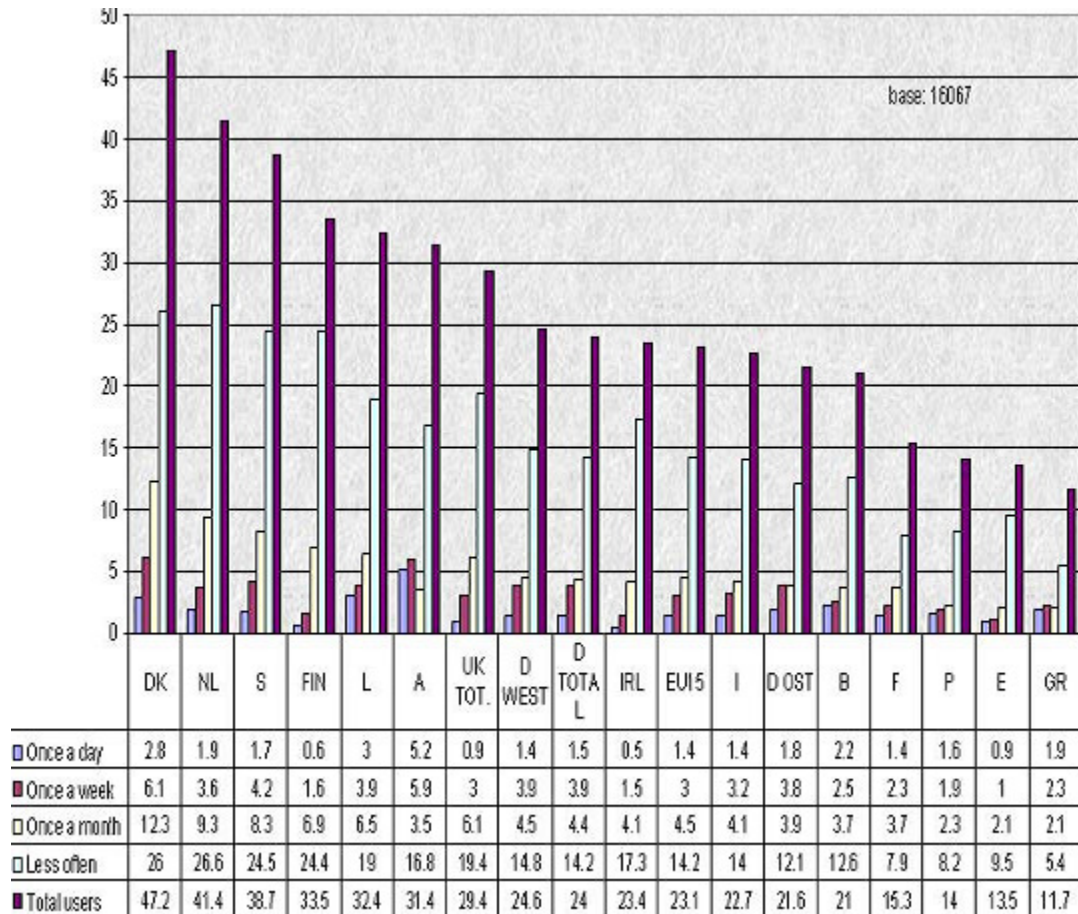|	DK	NL	S	FIN	L	A	UK TOT.	D WEST	D TOTAL	IRL	EU15	I	D OST	B	F	P	E	GR
Once a day	2.8	1.9	1.7	0.6	3	5.2	0.9	1.4	1.5	0.5	1.4	1.4	1.8	2.2	1.4	1.6	0.9	1.9
Once a week	6.1	3.6	4.2	1.6	3.9	5.9	3	3.9	3.9	1.5	3	3.2	3.8	2.5	2.3	1.9	1	2.3
Once a month	12.3	9.3	8.3	6.9	6.5	3.5	6.1	4.5	4.4	4.1	4.5	4.1	3.9	3.7	3.7	2.3	2.1	2.1
Less often	26	26.6	24.5	24.4	19	16.8	19.4	14.8	14.2	17.3	14.2	14	12.1	12.6	7.9	8.2	9.5	5.4
Total users	47.2	41.4	38.7	33.5	32.4	31.4	29.4	24.6	24	23.4	23.1	22.7	21.6	21	15.3	14	13.5	11.7

Figure 2. Eurobarometer Survey 2005

In Greece (11.7%), Spain, as mentioned, (13.5%), Portugal (14%) and France

(15.3), the people use the Internet less often for these purposes. 14.2% used it less than once a month, 4.5% at least once a month, 3% once a week, and 1.4% everyday.

When asked what their main sources for healthcare information were, the majority mentioned healthcare professionals (chemists, physicians, etc.), according to Eurobarometer's last survey. This was especially true in Ireland and Spain, where 61.9% and 61.8% answered accordingly.

In the same Eurobarometer survey, women had a higher tendency than men to ask healthcare professionals (46.4% compared to 44.2%) as their main healthcare information source. In this regards, men more often used the television (20.9% up against 18.9% of women).

In a similar fashion, the results show that the healthcare/medical organisations (like the Red Cross, Medecins Sans Frontieres, etc.) are the sanitary sources most trusted by the public.

The second most trusted source, mentioned by 67,2% of those surveyed are the consumer organisations.

Schools and universities, along with ecological organisations were also mentioned by 65.5% and 63% of the interviewers, respectively. The least trusted information sources are those from political parties and companies (10.7% and 16% trust them). In the United Kingdom the level of trust decreases to only 5.6% and 9.4%.

The media, the survey says, does not have a good reputations, or at least does not belong to a trustworthy environment, since 43.1% of those surveyed in the European Union do not trust them, and 39.3% do. Looking by country, we see that Portugal (66.8%), Spain (61.1%), Greece (57.5%), Finland (52.5%), Belgium (45.7%), Ireland (42.8%) and Italy (42.6%) respond positively to this type of information; while Sweden, the United Kingdom, Denmark, Luxembourg, France and the Netherlands react negatively (65.9%, 60.8%, 55.2%, 52.7%, 52% and 44.2% do "not trust," accordingly). In Germany and Austria the public's opinion is not so clear.

From all of this, we can conclude that "face to face" contact continues to be essential for people who need medical information or advice, therefore the internet is still only a complement which in very few situations becomes the key source of consultation.

But internet and new communication technologies allow for various functions that offer benefits at different levels of medical assistance to the public. Email consultation is becoming more common in healthcare centres, and the use of the telephone or fax for improving check-ups on diseases with the use of internet applications or even with virtual hospitals that resolve the medical assistance to specific groups of patients. All of this creates greater medical flexibility, cost savings, and above all, benefits to the patient's health.

Official data from red.es (a state run company) on the users of healthcare and medical contents online [6] from a survey called "Internet use and user profile" (September 2003 – March 2005), from the Spanish Telecommunications and Information Society Observatory, published in October, 2005.

Relative to the types of services used, like health information, the survey established a drop in percentage of internet users, as seen in the graph below, from 27.9% between 2003, to 25.3% in 2005.
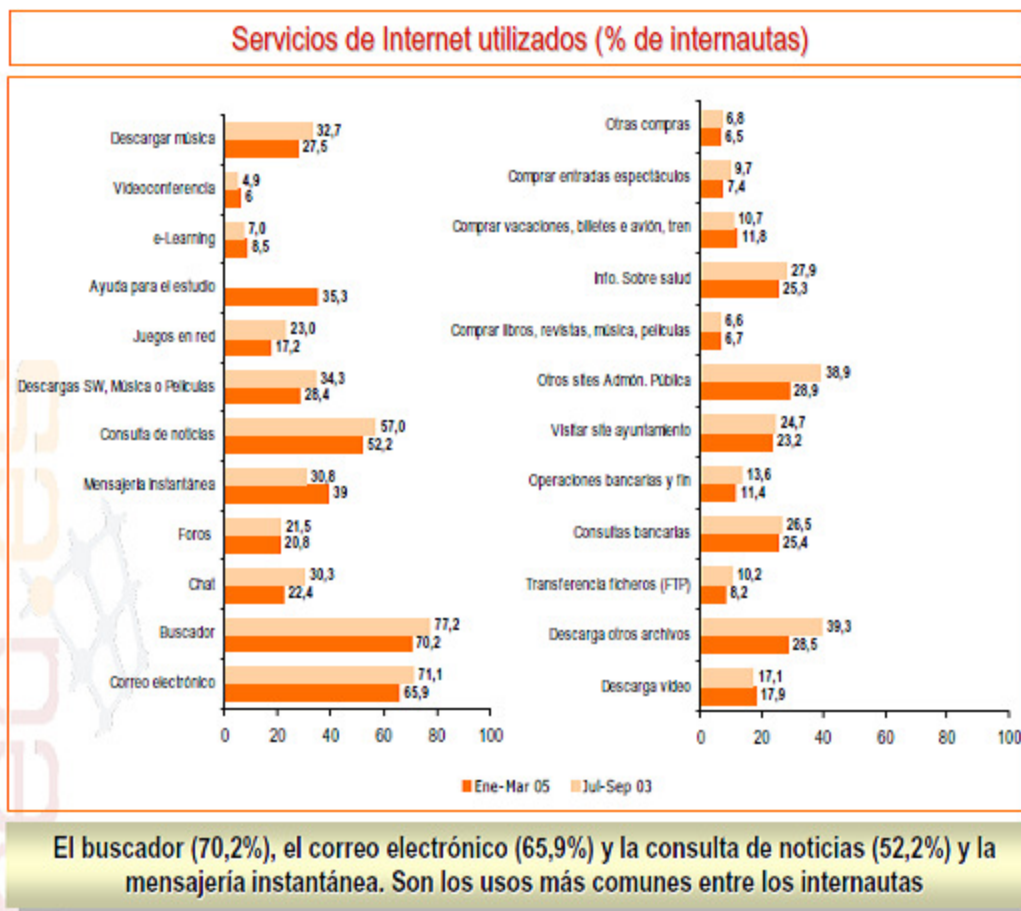
Figure 3. Red.es Survey

7. Types of healthcare and medical websites

The website universe on medical content is very extensive, and split up into various topics and in continuous technological change. Therefore, when attempting to categorise it, well defined, established and homogenous criteria should be use when differentiating types.

If we follow the divide made by the users, a first logical division would be between professional and/or scientific healthcare sites and popular or common usage healthcare sites. However, the content is mixed in terms of its organisation and distribution within the websites (professional and popular are mixed), which requires a third type or variable, where both aims are covered: expert and general public.

Knowing the owner of a medical or healthcare website could be useful information, since it helps improve the quality of the public sites. However, this is not a base for classifying websites.

The two divisions offer us the following outline where the public or the content can be shared and come in various combinations.

Also, according to the cyber media map recently made by a group of Spanish researchers [7] , that is, all the online media about this topic: science, health and technology is close to 7% of the current offer. This is a general indicator of its current placement in the digital media environment. However, the sample of 35 cyber medias does not specify the specific media for each area: film, healthcare and technology. Furthermore, it is impossible to distinguish between language

subgroups for the different autonomic languages like Spanish, Basque, Galician, Catalonian or Valencian.

If we abide by the OJD as our main online traffic review and verification source relative to cyber media and healthcare/medical websites, a classification would help us evaluate the amount of users, but even though it uses the tags system from its own server, it does not offer log file information from the servers of each website, which would help to compare some of the various positions produced upon comparing the information on a measurement systems.

8. Three developmental areas

We can focus on three areas where websites experience strong changes. Mainly, we considered the sites "alive" if they are updated daily and maintain some level of interactivity with the viewers.

8.1. Interactivity

More and more websites incorporate new services online adapted to a group of patients and structured according to the administrative requirements of the healthcare professionals. For example, the use of a web cast in cyber medias, like Medicinatv.com (http://www.medicinatv.com) or Diariomedico.com (http://www.diariomedico.com). Personalised electronic bulletins or distinguishing between the free and pay access is common for key medical publishing companies and important periodicals.

8.2. Updates

As often occurs on the internet, healthcare website contents are more often updated throughout the day not only due to better human resources, but with the help of additional services or RSS. This level of updating is typical for daily periodical information. A professional website offers updates more frequently on its document sources and this unique aspect is one of the most valued by users.

8.3. Quality control

One could think that top scientific magazines do not require quality seals or specific certifications online. However, the continuous changes in these magazines, and its possibilities to foment large scale browsing in the hyper textual universe by incorporating new interactive sections require a level of control and tools that a traditional editing committee does not offer. If a general search engine like Google or Yahoo collect a recent article from this pool of prestigious scientific magazines, it should guarantee its viewers that it is the original article, and not an illegal copy or reedited version, all in benefit of public health. The need for a quality certification system, controlled by experts, in a completely transparent fashion, whether dealing with scientific or popular websites, even from cyber media sites, is very evident. The semantic web concept may be the key in achieving this goal.

9. Notas

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[2] Informe Quiral 2004. Ver en http://www.fundacionvilacasas.com/ [volver]

[3] Congreso inforsalud 2006. Presentations «La visión integradora del proyecto Quatro en la

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[7] Cibermedios. El impacto de internet en los medios de comunicación en España. Comunicación Ediciones. (Salaverrría R., coord). Sevilla. 2005. [volver]