The Web's approach to healthcare problems

Sumario

1. Introduction

Technological innovations continue to add new ways of presenting Internet content. The improvement of telecommunication infrastructures along with the development of software allows the interaction between users to become faster and specially effective. In the healthcare sectors, this evolving process is seen daily, where the proper and rational use can improve the doctor-patient and hospital-patient relationship, along with the relationship among patients themselves. Moreover, like in other professional fields, medicine is discovering that it is possible to not only suit their routine work procedures to this revolutionary communication environment, but also optimise management results in a job which seemed confined to the conventional procedures of the assistance process. Medicine is now more social thanks to the Internet, and even more effective if we look at some studies.

The most common tendency of a conventional user in internet searches on healthcare is to use a search engine (Bernstam 2005) [1]. The most common are Google, Yahoo and MSN, providing a user their first access to the search process. The user may find very uneven, disorganised and even unrelated results. But this result provided by the search engines is not enough when a user attempts to solve a specific healthcare problem. The search engine does not provide a solution, but a list of references, at most directories, files and links related to the word's morphology, and not its semantic meaning. It also lacks a level of content quality and reliability. In fact, the level of quality is not even a regular reference indicator when searching for content. (Meric 2002) [2].

Various institutional, academic or professional groups in medicine have developed initiatives to provide a better formula, always aspiring for optimal quality of medical information on the Internet [3].

Meanwhile, we must also consider that the new generation of technologies is evolving towards uniting all communication mediums in software and hardware. Content on TV, radio, film, videogames or the Web itself may be integrated under the same medium. This convergence of mediums, or "mediamorphosis" is already an irreversible fact. Fifteen years ago, R. Fidler foresaw that in the year 2010 the electronic editing and distribution systems would be competing with many mechanical printing processes [4]. They are therefore complementary. It is a transformative process that Díaz Nosty also manifested years back. Back then, a fundamental change was seen: "In upcoming years electronic mediums will be cheaper, multiplying their possibilities and offering an

immediate response to the diffusion and distribution of information" [5]. Within the framework of this process of continual changes, current healthcare contents online and their diffusion methods may find an unexpected social function and utility. There are many key elements in healthcare website's architecture that aim to provide answers to healthcare problems, but they may also be limited, impeding the optimal level of quality to be reached. With this, we hope to help inform those responsible for this task. The key criteria guiding a website on healthcare education to the general public is its clinical functionality, which is its capacity to contribute to healthcare problem resolution. If this criterion is relegated to another of the website's interests, it will not fulfil its key aim of socialising medicine's benefits. Just like there is an algorithm for clinical decisions, a website focused on resolving medical type consultations should respect this logic to some degree, channelling the user's consultation by following a content order. The presentation and description of a healthcare problem and applying medical assistance logic would take the following path: Prevention, Diagnosis, Diagnosis confirmation, second opinion, treatment (surgery or no surgery), patient follow-up, and prevention. This is the route than can provide a guarantee of medical/healthcare content when attempting to be efficient in Internet consultations for problem resolution. This does not exclude the need and interest in popular or non-resolution based content to contribute to improving knowledge and healthcare awareness. A report summarising epilepsy is compatible with a consultation on a well-described operating procedure within the same website.

2. Five ways of making the internet more effective with medical consultations

1. Reliability: Content quality is the key for a website's viability and projection. This is why we recommend guaranteeing transparency and rigour in the therapeutic options found on the website through a committee of expert evaluators that can resolve questions and whose qualifications can be verified by the user.

For a website to prove its quality with certificates from entities such as Hon Code or other professional institutions is only one way of minimally certifying their commitment to their content's certainty and truthfulness. But is there a more active and current method of recognising quality? One option would be to foment expert participation in web topics. That is, if a committee of observers periodically grades and testifies to these contents, a specific qualification would be maintained instead of a general qualification provided by the current quality certificates. This committee or "board" is what would give the user or patient security in finding rigorous data; a public committee without commercial interests in healthcare products interfering with content evaluation.

To present a directory of professionals associated to the procedure or treatment with a description of its trajectory, a professional profile and guarantee is essential. Another option that can contribute to reinforcing a website's identity is to provide a list of scientific publications related to their professional activity--either from the author him/herself or others. The use of quality seals like that used in Hon Code and others recommended by professional medical institutions verify certain principles, even though they usually are static seals that are renewed annually. As long as it is a static seal, it can not be enough to guarantee the quality of the daily flow of content.

The review of prestigious medical journals and publications have for years used a peer review system in paper editions. Nobody argues with the leading medical journal's quality, which have been valued for their publishing professionalism and rigour for years. Moreover, the high level of quality is unquestionable in the leading databases of the well-known public institutions. However, in specific public healthcare websites there are shortages and limitations that could be compensated with better documentary and interactive resources, if we attend to the information provided to the citizens concerning healthcare problems.

2. Accessibility: Changes are a constant in technology. All content must be made with all the possible guarantees for accessibility, which requires an evaluation of the technologically developed

societies as well as the underdeveloped ones. The digital divide is an obstacle to be kept in mind, since it limits access and consultation to this content. A website with medical information should allow groups with physical disabilities access to consultations, which means providing audio documents, static and animated infographics, text that can vary in size and sans serif fonts are all essential elements. Meanwhile, the audience's wide profile range requires us to think of a simplified usability at the most basic level. The public's profile could include digital illiteracy.

A consultation about a diabetic retinopathy or deafness could require an audio multimedia programme for the former and content infographics for the latter, which is much more exhaustive than a conventional website.

3. Utility: Every day we see an increase in interactive guides allowing the patient to get to know their illness and identify it. If the web is also aimed at a professional, these guides must be inspired in the clinical protocols followed in the key medical centres for this disease. Self-help information presented on a website should at least have an independent committee of medical experts that guarantee the reliability of the content and the supervision of articles and opinions found on these websites. Their altruism has to be compatible with a respect towards the content's truth and quality. Quality seals are a certification, but what is truly effective is the personal commitment of those real life people behind it.

4. Objectivity: All content must provide all possible therapeutic options, without false expectations. The possibility of providing content through rss or other feedback systems must be moderated and supervised in order to avoid confusing news or information. Providing content from third parties results counter-productive.

Sources from commercial information or product content must be clearly classified as such through design and browsing methods, without mixing the information that is based on scientific or academic experience. Commercial information is not always the best option for providing a solution to a healthcare problem. As a general marketing strategy, they tend to avoid other equally valid possibilities, and this criterion may limit the patient's or user's decision. All problem healthcare solutions should be presented, at least categorised or discussed clearly and objectively.

5. Diversity: Evaluating sub-groups is essential for creating information with a real projection over healthcare website users. There are many medical sub-specialties, but there are classifications within healthcare problems that may improve navigability in a website. So we must keep age and sex in mind when clarifying searches. A paediatric patient has a different profile than an adult or geriatric patient. In some cases, a male patient may have a different navigational itinerary than a female patient. Solutions or responses to consultations in healthcare topics differ for males or females, which should be understood in the website's architecture. The diversity of sub-groups also has anthropological and cultural considerations. There are civilisations that provide the sufficient tradition and guarantee to be considered as a valid option in disease treatment, which may be included in websites with sufficient certifications. Therefore, these situations must be evaluated and included if they provide a real value to the user's consultation.

The algorithm with which search engines position a website in healthcare is the same one used in an auto dealership. No semantic based results are provided. A private clinic could be in the top position in a search for the word "cancer," while the best, independent expert approved information for patients on this disease would not appear. This shows that the Web is far from being able to resolve healthcare consultations as long as a semantic structure is not implemented. Search engines are private and commercial. Healthcare problems and their solutions are, or should be, public domain, creating a disagreement in aims. Would the large search engines locate the most useful and highest quality medical content at the top positions, without an economic retribution? For now, if a non-commercial website is of the highest quality, it would have to follow the same strategies as any other commercial website if it hopes to be visited most often. The implementation of the semantic web concept may be key to changing this environment.

3. Coherence in design, programming and contents: cholesterol

The research on healthcare content on the Internet is classified by medical specialties and by professional needs in the healthcare sector. But often, they are classified by the population's general demand or by patient groups. For this reason, in 2006 the Observatorio Comunicación y Salud del Instituto de Comunicación de la Universitat Autónoma de Barcelona suggested a multi-centre research project focused on studying the social projection of medical content. Their first case consisted in determining a scientific work methodology using a sample of websites on hypercholesterolemia.

The study, called "Colestrerolnet," was a comparative analyse of processing information on cholesterol and an evaluation of the quality of the content on 51 websites as a function of categories and valid indicators.

The method initially included a pre-identification of evaluated websites, according to the model of the technical file established as an authority, location and Internet URL. Then a table of parameters and indicators was applied to the samples selected through direct observation. The value of each parameter and indicator was determined with statistical percentages and absolute values.

The methodology used was based on the Medcircle project, promoted in Spain by the Internet quality agency IQUA and Barcelona's Pompeu Fabra University´s Journalism and Audiovisual Department and Library Sciences department.

Moreover, it also used criteria promoted by the Swiss international organisation "Health on the Net" (HON).

71 indicators classified into 10 categories were used in the evaluation: credibility, updating, objectivity, clarity, comprehension, originality (including the subcategories of accreditation, confidentiality, and quality guarantee), publicity, amount of proof, professional applications and specific content. The sample evaluation was also classified into categories based on whether the websites analysed were lucrative or non-lucrative.

The indicators were adapted to the sample with the aim of being able to obtain homogenous results. Once selected, the indicators were distributed into the mentioned categories to achieve an adequate stratification of the sample. The evaluation of each indicator was determined with values of one or zero.

Each categories performance was determined by calculating the subtotals to the absolute value and percentage. The total value of all categories was then calculated in order to establish an overall comparison between all websites analysed. This way each category's performance was evaluated and each element was compared to the sample as a function of this comparison.

Each indicator was accompanied by a usage criterion to be applied in the evaluation between April and June of 2006. Moreover, each indicator was reviewed by a second observer before being evaluated as a one or a zero.

The research concluded the following:

1. Interactivity

More and more websites incorporate new services on the internet adapted to a group of patients and structured according to the administrative requirements of the healthcare professionals. For example, the use of a webcast in online mediums. Personalised electronic bulletins or distinguishing between the free and pay access to links is common for key medical publishing companies and important periodicals.

2. Updating

As often occurs on the internet, healthcare website content is more often updated throughout the day not only due to better human resources, but through the help of feed readers or RSS. This level of updating is typical for daily journalist information. A professional website offers updates more frequently on its document sources and this unique aspect is one of the most esteemed by users.

3. Quality Control

Healthcare and medical websites on cholesterol, even those on other healthcare related topics, are an increasingly accessible gateway to healthcare education. However, the quality control of this

content is found in a settling phase, where they are attempting to perfect various systems to help the user and patient solve or improve their health problem. On the other hand, this study shows the diversity of ways and methods available in presenting information on cholesterol, while no quality seal or accreditation system recognised by governmental entities were identified, so no real guarantee was provided from a legal perspective, except for the case of HON and Web Médica Acreditada .

One could think that top biomedical or clinical scientific magazines do not require quality seals or specific certifications online. However, the constant 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 paper editing board can not offer. If a general search engine like Google or Yahoo collects 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 for the benefit of public health.

There is an evident need for a quality certification system, governed by governmental legislation and controlled by experts, in a completely transparent fashion, whether dealing with scientific or popular websites, like those in this study or from other internet sites. The concept of a semantic web, as previously insisted upon, should be implemented as soon as possible if there is a true commitment to the development of e-healthcare.

4. Acknowledgments

5. Footnotes

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