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INNOVATING HEALTHCARE PROCESSES FOR SPEED AND EFFECTIVENESS

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ABSTRACT

For several years, health networks have developed devices enabling coordinated care of patients in France, regarding both medical plans as well as medico-psycho-social and human care. Some have developed computerized health records for sharing useful information for the coordination and continuity of care. Since the 2009 hospital reform, cooperative operating modes between health system professionals and users are being installed. The implementation of a health information system permits, on one hand, to ensure the transversality of the business process with the patient and, on the other hand, to measure the results of the medical and economic evolution of a complex system of information. The possibilities offered by new technologies of information and communication enable the development of applications supporting increased "on line" participation for citizens. The "ambulatory approach" exports healthcare outside hospital walls. This is an innovative medicine allowing the patient to stay at his home. In France, this re-engineering is based on four areas: a medical record, a collective ownership by the medical and paramedical professions, empowerment of patients and networking in the health sector.

Keywords: Health, Networks, Information System, Innovation, Medicine, Patients, Science.

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1. INTRODUCTION

Cancer social networks are organizations in charge of coordinating the actors of the cancer-care practice on a regional scale. E.g., the Communicating Cancer File (DCC) constitutes a system for sharing medical information among health professionals. Its prolegomenous lines date from the 1997 National Health Conference (CNS) and are engaged in an overall public health policy, built around the main line of improvement of the quality and the coordination of cancer-care practice.

It is, however, appropriate to question the conditions of the formation of cancer social networks through the analysis of the DCC. It is accordingly necessary to go beyond the opposition *prescribed/real* and analyze the construction of this programmatic network. Thence, the facets of this policy will appear strongly linked to each other and its application could be interpreted as a sociotechnical network in terms of the sociology of translation (Callon, 1986), (Akrich et al., 1988).

In the heart of the knowledge societies generated by Web2.0, there is a capacity to identify, to produce, to treat, to transform, to broadcast the information. The sharing of medical information is based, however, on a vision of the society convenient to the empowerment.

The development of new technologies of information and communication created new conditions for the emergence of a networked medicine (Boudry, 2012). The construction on a national scale of a networked medicine constitutes a source of development of the information for all actors of the health system.

Finally, the networking of the knowledge and the acceleration of the data processing open new working possibilities on the medical databases and knowledge management systems.

Is it wise also citing references more current and better explain the concepts of social networking?

There is an alliance of a set of human and non-human agents involved in an essential stage on the road to enhancement and harmonization of care practices.

The non-human agents are texts, protocols, as well as ecology of parasites contributing to the medical practice: the DDC, hospital information systems, paper files, medical imagery databases.

Then, could it be that the development and engagement processes are highly articulated on a DDC's design as an open tool supporting a flexible membership and thought as being subject to various presentations according to the entities to be associated?

Not to mention that the human agents not only gather physicians but also a large number of health professionals; the communication is an essential component for the quality of the provider-patient relationship.

In addition, the patients often have difficulties in understanding the words used by health professionals (Koch-Weser et al., 2009). Analyses of the vocabulary indicate that the frequency of occurrence of words in a diagnostic announcement consultation has low correlation with the frequency of occurrence in the current language, thus pointing out the specificity of the words used in a cancer diagnosis (Ferrand et al, 2010). These data provide a means of explaining the difficulty of comprehension that patients have when receiving a cancer diagnosis, and permit improvements in the communication between patient and carer.

In order to improve the provider-patient relationship and to support a better individual care tailored to the patient needs the major role of these types of communication during a care should be emphasized by a clinical pathway. This would indeed identify very specific and concrete problems related to the daily care practice.

The objective of this study was to try to understand the subjective experience of the sick individuals in the fall of the various phases of the course of care. The daily clinical practice allows to underline that there are two hinge phases in the route of care: the announcement of the disease and at the end of treatments. What role, which symbolic value takes the moral in these various times of the patient / carer relationship and in the intimate real-life experience of the patient? What solutions could be proposed to these patients to improve the support which they need during their treatment?

2 GENERAL BACKGROUND OF RESEARCH

The technological changes which have affected, during the last decade, the means of creation, transmission and processing of information suggest that we enter a new era of information (Vajou, 2009). Succeeding the medical information established on the orality of a consultation, the writing and printing, the rise of digital (Badillo, 2010) has promoted an unprecedented spread of medical networks according to two main lines: one horizontal, the acceleration of transmissions, and the other vertical, the concentration of connections. We are in an era where communication is increasingly growing, especially between physicians, and this interactivity also exists between patients. With the rise of Web 2.0, the communication abilities develop (Quoniam, 2010) and highlight the fact that patients are not passive receptors and can build autonomously virtual communities whose discussion forums are the most visible example.

Web 2.0 allows significant profits in terms of accessibility and maneuverability of information. Provided that one can distinguish between raw information and an erroneous assertion (Denis, 2008), this forms the basis of a true knowledge. Thus, the Internet can function as a gigantic supply of ideas.

Moreover, Web 2.0 facilitates collective work and the joint acquisition of knowledge. Long confined to specific locations as the hospital, the learning and sharing of information are nowadays accessible remotely.

Such an information overload will only be able to provide more knowledge if the tools analyzing this information through reflection rise increasingly to the challenge.

If the transmission and the dissemination of information and scientific knowledge become so significant in our society, there is now an increased production of new knowledge, especially with an increasing interest of the whole society for knowledge.

Innovation is a valorization of acquired knowledge, during production and commercialization of a new molecule. It is necessary to distinguish invention and innovation, because the same invention could lead to an innovation in one society but not in another. Besides, scientific innovation often requires time (Fondin, 2001) to reach its momentum.

There is a non-communication between scientists and the general public so that we can wonder whether the debate between scientists and consumers can really takes place? Thus, transformations induced by sciences sometimes sink the public (Nephew, 2002) into a sense of mistrust towards scientists. This it is a relatively recent phenomenon because science has long been respectfully considered in positive terms, often generating fascination.

Scientists relegate the mediatization of science to an under-developed activity. In their view, they alone are wise and vainly attempting to share their knowledge to a bunch of ignorants. This vision of science reflects an elitist view of a science thus considered the sole reference.

For a long time, decisions on science and medicine were matters of a near exclusive relationship between scientists and their silent partners (governments, pharmaceutical laboratories), and society could only align with top-down decisions. From now on, there is an upheaval of the decision-making structures due to the influence of mass media and new information and communication technologies on the modes of governance (Chaudiron, 2010). The prominent place of sciences and medicine in day-to-day life makes scientists think with new interactions. By promoting the flow of information and establishment of new networks (Galinon-Mélénec, 2010), new, more transparent and decentralized dissemination of information models are emerging.

However, scientists and physicians must adopt a straightforward approach towards citizens who have finally become increasingly demanding as increasingly well informed.

In the health area, governments and the medical community are increasingly aware of the growing requirement of patients for greater implication in their related decisions. To meet this demand, beside their inherent organizational structures, physicians should promote delegation structures where the most important actor is the patient (Batifoulier et al., 2008).

Nowadays, the aim is not to oppose physicians to their patients but rather to support, whenever possible, the setup of interface structures where both actors, physicians and patients, are engaged in a respectful dialogue. Physicians are indeed primarily concerned both as specialists and as citizens.

Medicine is a science attached to moral values and, by definition, a source of ethics: the transparency, neutrality and the veracity are standards of good clinical practice of medicine. The creation and the management of structures of discussion, such as forums and workshops, allow current medicine to be an inclusive and participative medicine (Robert, 2002).

2.1 RESEARCH METHODOLOGY

The population of the study consists of 115 feminine subjects, the age of which is included between 30 and 70 years, and who have been looked after for a breast cancer.

The methodology of the research allows a quantitative approach which allowed us by means of auto-questionnaires to estimate various features of the patient's personality, various reactions towards the disease, the perception of the availability of its circle of acquaintances, the emotional state and the quality of life, and this at different times of the disease (every 3 months the first year consecutive to the surgery). Use of questionnaires QLQ-C30, EORTC, Anderson and Aaronson (1993), which allow to estimate the physical, emotional, cognitive, social functioning, the activities, the fatigue, the pain and the global quality of life of the patients.

The period of inclusion of the patients was of 14 months and the duration of participation for patients is of 13 months. The patients were met at different times of their disease: 1, 4, 7, 10 and 13 months after the surgery.

We proceeded first of all to descriptive statistics at the level of the psychological variables (average, standard deviation) to characterize our study population, which allows us to compare it to other populations (French subjects with or without cancerous pathology).

The changes in the time of the psychological variables and the quality of life (at various times throuhout the study) were tested by MANOVA with repeated measures. We also wished to take into account treatments undergone by the patients by realizing MANOVA with, as intra-subjects variables, the dimensions of quality of life, and as inter-subjects variables, the chemotherapy, the radiotherapy and the type of surgery.

To investigate factors connected to the quality of life, we led analyses of hierarchical multiple linear regression which allow to investigate the existing relations between a quantitative variable to be explained and a series of explanatory variables. This analysis allows us to determine the variables which contribute to the explanation of the variable to be explained (% of explained variance).

We also took into account treatments undergone by the patients by realizing MANOVA with, as intra-subjects variables, the dimensions of quality of life, anxiety and depression and, as inter-subjects variables, the chemotherapy, the radiotherapy and the type of surgery.

2.2 RESULTS

The patients are between 31 to 77 years old, with an average of 56,19 (standard deviation = 10,33). The majority of them live maritally (74,5 %), are awarded a diploma (88,2 %), have two children or more (70 %). Near half of the patients are active professionally at the time entering the study (49,1 %).

Variance analyses reveal that the global quality of life degrades during 3 first time points (from the moment of the surgery to 4 months later), and improves afterwards but without ever regaining its initial level (this by checking treatments undergone by the patients, i. e. the radiotherapy, the chemotherapy and the type of surgery). At the physical level, we also observe a significant decrease during the first 4 months but which stabilizes at its lowest level.

When the patients receive a chemotherapy, their level of anxiety increases between the moment of surgery and one month later, then decreases, while for the patients without chemotherapy, anxiety decreases throughout the 3 first time points, and increases then. There are no significant differences anymore at the level of the anxiety throughout the 3 last time points (from 7 to 13 months after the surgery) .

3 DISCUSSION

Sciences and medicine are very present in daily life and public debates. The public seeks scientific knowledge, but is it able of understanding all in terms of medical information, and if so, which means of communication can be implemented by scientists and doctors?

It is the generalization of the scientific knowledge (Baudouin, 2009) that allows resolving disparities between individuals, whether these are social, generational or gender inequalities.

These can only increase because scientific and medical innovations are being developed on a quasi-daily basis. Likewise, these disparities can only become worse, depending on the collection tools of the medical and scientific knowledge available to each individual. Besides, they highlight the population's need for scientific learning.

Popular scientific culture (Jost, 2010) will enable everyone to make individual decisions, *e.g.*, medically, or even sometimes collective decisions. The public does not necessarily need a cutting-edge scientific or medical knowledge, but it needs to acquire an essential “kit” of scientific vocabulary or medical jargon, in order to be able to judge relevance of the scientific information, provided through the various current means of communication.

The people's education in science (Fondin, 2001) is a necessity; not to acquire a cutting-edge scientific or medical level, but to enable the public to develop knowledge and a participative scientific language, in a society more and more influenced by sciences, new technologies and medicine.

Scientific culture should offer to everyone the ability to seize the individual challenges, e.g., related to its disease, but also collective challenges, particularly if they have some economic or political impact. It should endow everyone with the necessary organizational skills, given the current means of communication, submerging anyone with information.

Through scientific culture, individuals should be able to organize and prioritize scientific and medical information. Due to the multiplication of sources of information along with information overload (Paillart, 2009), information flow can become a major handicap if one cannot sort, manage, or select the data received.

But the mediatization of scientific and medical information takes on various aspects and levels according to the employed means of communication and primarily according to the public concerned. One should distinguish between "popular scientific culture", destined to a large public, and "scientific culture", reserved to specialists, and promoted by conferences or articles. Finally, "medical culture" aims at communicating the common answer to a medical question of interest to a broad public.

This is possible both by the means of books, radio, television, as well as by Internet forums, blogs, but also through thematic social networks. The scientific and medical training of the population obviously considers the technological advances of the means of communication, but also includes an evolution of relations between scientists and nonscientific.

The communication by physicians or scientists is a delicate exercise because it requires an effort of translation from specialists with various objectives which, however, all stimulate the public interest for science.

Mass media such as the Web 2.0, (Quoniam, 2008), (Rieffel, 2005) are essential for an open scientific and medical communication even if many specialists complain about the too great popularization of "their sciences". However if the scientific community wants to gain prominence in the media, it must adopt the communication techniques for the general public.

A social network (Forsé, 2008) is created by needs: it emerges from a core of relations which creates co-operations. It is a spiral innovation which nourishes exchanges of the network actors, as the relationships between individuals form the network and are a suite of interfaces produced by the human interaction. Of course, this suggests that the more favorable the relational context of network participants is, the greater is the success of the network (Herault, 2009).

In the precise case of medicine, the rise of new information and communication technologies created new conditions for the emergence of a networking medicine (Boudry, 2012). Knowledge networking and acceleration of information processing open new work opportunities on medical databases. Knowledge management systems are established, at the level of great scientific and medical organizations as well as in small hospital institutions.

The term "need" reveals that health is not solely disease-centered: "*health is a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity*" (Preamble with the Constitution of the World Health Organization, 1946). By no longer considering health as the treatment of pathology, the extent of related competences and fields is vast; doctors are united with paramedical professions, psychologists, sport coaches, social workers… The patients need specific care, related to individual yet dependent specific fields (Galinon-Mélenec, 2010).

The extent of the healthcare system itself with a multiplicity of actors generates the notion of coordination and *in fine* the need for health networks. The major objective of these networks is to promote the cooperation of network actors, in order to place the patient at the focus of the healthcare system.

The "*doctor-patien*t" health network must be guided by process logics and conduct rules but also by results. Co-ordinating knowledge of these network actors will be effective for the principal beneficiaries, which are the case-patients. The quality of patient care, the health care access, the follow-up must be based upon data-sharing and listening.

4 CONCLUSION

Necessary enhancement of communication between professionals and public

The health information system is neither an application nor a computing platform managing shared medical records.

Two of the challenges posed by the information revolution are especially significant: the access to medical information for all users and the future of the open access to the medical world. Indeed, doesn't the unequal access to sources, contents and medical information infrastructures put in question the truly national nature of social networks in medicine? And when free flow of medical information whatsoever is impeded, or that information itself is the subject of censorship, can one speak about social networks in medicine? Finally will these social networking websites in medicine be able to have a future "*patient-doctors*" development, thus giving a social support, which would seem inextricably linked to healing?

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