THE RELATIONSHIP BETWEEN MEDICAL LITERACY AND TRUST IN HEALTHCARE IN ROMANIA

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Abstract. *The paper discusses the issue of patients' trust in Romanian healthcare system, from the point of view of the information they get from the internet. Using cross-tabulations, correlations, and factorial analysis, based on data from the European Values Survey, we track the influence that internet literacy may have on healthcare related behaviour, choice, and trust.*
Further research should include primary data collection, in order to ensure a better focus on the niche we are interested in, and investigate adjacent factors which may interfere with healthcare-related information retrieval and formation of patients' trust in the healthcare system.

Keywords: healthcare system, Romania, trust, patients, internet, healthcare literacy.

1. Literature review

The issue of trust in healthcare professionals, and in healthcare institutions, as a prerequisite for communicating with patients, has been the focus of several studies. John (1996) quotes Hippocrates's opinion that a patient may cure only by his belief in the power of the physician. John develops a parallel between medical roles and theatre, in terms of distorted, highly emotional perception of the physician's "performance". Cases like that of Dimitrie Grigoriu-Arges (Zeletin, 2001) are quotable, from the records of Romanian medical history, in support of such an approach.

Hall (2006) reviews the recent research on trust in the US medical system. He quotes various scales of trust in physicians (Caterinicchio, 1979; Anderson and Dedrick, 1990; Klosterman et al., 2005; Piette et al., 2005; Tarn et al., 2005). These scales are intended at predicting the criteria used by the patients when choosing their physician and at evaluating the part medical insurance, which restricts physicians' choice, plays in this relationship. Hall extended the existent scales by adding measures of generic trust, like *trust in the medical profession*. He found out that, while interpersonal trust is related to direct experience, generic trust is more influenced by stereotypes. Here comes the issue of information retrieval about the healthcare profession, which leads to the creation of a certain image, stimulating trust or distrust. The same relationship, between medical professionals and managers is discussed by Boyer et al. (2010), through the lenses of social networks, which have to be established in hospital settings, to enable widely acceptable decision making. Again, the approach revolves around the concept of trust.

Klopper-Kes, Meerdink, van Harten and Wilderom (2009) discuss social stereotypes' emergence in the relationship between physicians and hospital managers. The relaxation of stereotypes, as suggested by the researchers, consists of a mutual patient focus, targeted at enhancing trust. From the patients' side, Ranerup (2010) discusses the transition from patients (*passive*) to consumers (*active*) putting forward, as well, the issue of trust. Gaining and preserving trust, in the context of an improved access to medical information, and, presumably, of increased health literacy, poses certain challenges to physicians, as individuals, and to the medical system, as institutional environment. Thus, trust is not the blind confidence of a *spectator*, in the Hippocratic view, mesmerized by the performance, but the rational choice of an informed consumer. Rowe and Calnan (2006), quoting Mechanic (2004), identify a decline in trust, both interpersonal and institutional, in healthcare. Their analysis relies on the premise that, while trust is based on rational grounds, it still includes an emotional component. We may argue that this latter side of trust is even more subject to stereotypical influences than its cognitive part.

Our assumption here is that the way patients react in relation to their physicians, to the hospital environment, and to the generic idea of *seeing a doctor* is largely influenced by their health literacy. Vahabi (2008) considers health literacy in a rather narrow sense, that of being able to understand prescriptions, to deal with medication and be aware of the importance of adequate treatment for one's health condition. The article further investigates, following previous studies, the correlation between health literacy and health status, proving that the health status of the medical illiterates is more subject to decay, due to opacity to prevention, treatments or inadequate handling of

recommendations. Still, in our view, the matter allows for a wider approach, which relates health literacy with the construction of stereotypes, dependent on the sources of information and the trust which is attributed to them. Back in 1994, Andaleeb speaks of more sophisticated patients, due to their greater knowledge about the benefits and risks of healthcare. He also mentions the decreasing role of patient-physician relationship in orienting choice, as other factors begin to emerge.

Internet sites, and the informational resources they provide, have come, recently, to play a significant part in people's choices, by shaping their beliefs, in two related ways:

a) the informational content as such, which is widely available, but not always trustworthy, not to mention the danger of *illettrisme* (lack of comprehension of the information read);

b) the social networking component. On forums, chats, groups, etc. other's preferences, real or declared, become visible, and influence the opinions and preferences of the persons coming across them. The effects of socialization in the hospital waiting room tend to be replicated, and complicated, by the patients' interaction in the virtual space.

Given these influences, the relationship between internet use for retrieval of either medical information or opinion pools regarding physicians, treatments, hospitals, alternative medicine, etc. and patient behavior and choice has been, lately, in focus. Following a path opened by Eco (2008), Mansurian (2008) witnesses the heterogeneity and disorder of information in the internet, which affects information visibility. Kickbush (2008) connects information overwhelming with abundant promotional messages, making it difficult for the patient, as consumer, to get full understanding of the alternatives and to have an informed choice. Internet comes first, in her study, among the quoted sources of information regarding healthcare, as its diversity matches the increasing demand for various medical information, qualified or unqualified. Williams, Huntington, and Nicholas (2003) support the fact that health information has become ubiquitous. Still, patients' or potential patients' readiness to rely on the internet nurtures a state of confusion, which is also perpetuated by low levels of health literacy. Kickbush correlates health literacy with informed decision-making, in the same way in which general literacy influences the quality of our daily choices.

Cooke (1999) claims that most of the healthcare-related information on the internet is rather "dubious", unmatched with the medical guidelines. The second component we quoted, that of online groups expressing opinion and advice regarding medical practice may be even more misleading, when information is not adequately filtered. Culver et al. (1997) discuss the issue of people with no formal training in medicine recalling their personal experiences which, based on a *comparaison n'est pas raison* more valid for medical cases than for any other situation, may be not only unhelpful for other patients, but even harmful. While anonymity is one of the main reasons for which people join health-related groups and forums (Huntington et al., 2003), it is also their main shortcoming, as the reliability of the information can't be properly checked. Still, as White and Dorman (2001) argue, users gradually correct misleading information, meaning that these groups follow the self-filtering dynamics of the internet, taken as a whole. For sure, another distinction should be made between stories relating to administrative experiences in the hospital setting, and those relating to medical protocols. This, however, exceeds the scope of the present research.

Technical information – like finding a physician with the help of the internet should be set apart from information encapsulating a judgment of value – finding a *good* physician, based on peer evaluation on the internet and even more from "shortcuts" mediated by the internet – like self-diagnosis and self-treatment. Our research will, further on, discuss only the aspect of generic trust in the medical profession, and in medical institutions, in relation with the general internet literacy.

Our research will focus on the situation in Romania, where medicine has evolved from elite to a visible post-revolutionary contestation, along with scarcity of financial resources, large exodus of physicians, nurses and also mighty patients, receiving treatment in Western countries, which further undermines general trust in the system.

A recently released sociological study (STISOC, 2010) on the Romanian population shows that the level of scientific illiteracy is very high, as 80% of Romanians do not have elementary scientific knowledge. On the contrary, they tend to be very trustful in astrology, magic practices, religion, while 59% think that scientists are potentially dangerous. Considering this background, we expect a low level of trust in physicians, and in medicine, which correlates with an uncritical use of information on the internet, lack of double-checking, and a highly emotional, rumor-based pattern of decision-making.

2. Methodology

We have used the five-wave integrated data file of the *European and World Values Survey*, 1981-2008, which allowed us to examine the dynamics of trust in medical profession and in medicine, in general. There was a restriction concerning data availability, as the only waves when Romania was included in the survey were 1994-1999, and 2005-2007, that is, early transition and present times, when the healthcare system should be, presumably, more developed, and internet more widely spread.

The sample included 3,015 cases, whose distribution by age and education level is shown in Figures 1 and 2 below:

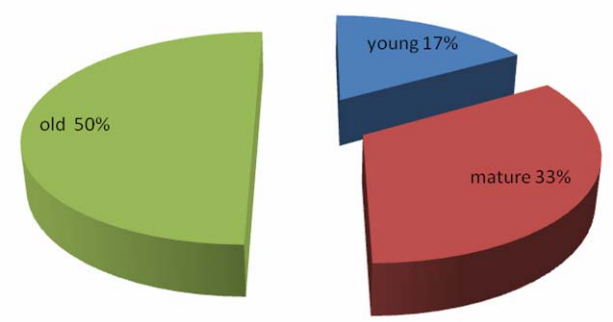

Figure 1. Age groups in the sample

The age variable values were aggregated into three groups: young (under 30), mature (31 to 60), and old (over 60). It can be seen that mature and old subjects, having experienced both regimes, are prevalent, which serves the comparative purpose of the research.

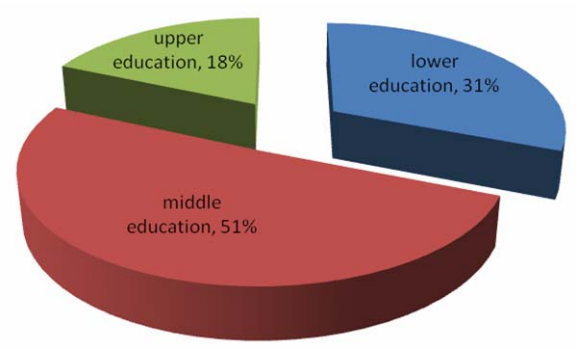

Figure 2. Education groups in the sample

Half of the sample is composed of people having middle education, while the proportion of university graduates is rather low. Thus, healthcare literacy is measured at a general population level, targeting the typical user, not necessarily the highly skilled persons.

The objectives of the research were to track the changes in internet use, information retrieval from the internet, and confidence given to the internet, in comparison with the evolution of trust in the healthcare system.

The variables chosen for our study were: *state of health*, *information source: internet*, *confidence in the internet*, *science and technology make our lives healthier, easier, and more comfortable*, *most people can be trusted*, *confidence in the healthcare, system*, *what thing are you proud of in your country*, and classification variables, *age* and *education level*. Each variable, except for the classification ones, is expressed on a 1 to 5 Likert scale.

The descriptive statistics for these variables (on the aggregated sample) is presented in Table 1:

Table 1

Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Most people can be trusted	2,872	1	2	1.80	.397
Confidence: Health Care System	2,812	1	4	2.76	.854
Confidence: internet	2,924	1	4	2.48	.781
Science and technology are making our lives healthier, easier, and more comfortable	1,587	1	10	7.69	2.297
Information source: Internet, Email	1,720	0	1	.14	.352
Valid N (listwise)	1,370				

It can be seen that people in the sample are quite positive regarding science and technology progresses, rather internet literate, and rather trustful.

We used frequency analysis, correlation analysis and factorial analysis in order to underline the relations between medical literacy and trust in medicine in Romania. The analysis was performed using SPSS 16.

The results of the analysis are presented in the next section.

3. Results and discussions

The evolution of the state of health of the sample, subjectively estimated, is seen in Table 2 below:

Table 2

Wave * State of health (subjective) cross-tabulation

Count							
		State of health (subjective)					Total
		Very good	Good	Fair	Poor	Very poor	
Wave	1994-1999	186	470	443	117	21	1,237
	2005-2007	175	776	569	254	0	1,774
Total		361	1,246	1,012	371	21	3,011

The percentage of persons in the sample indicating that their state of health is good and very good is fairly the same in the two waves (around 50%). Additionally, there is no significant correlation, in our analysis, between the subjective state of health of a respondent and his/ her confidence in healthcare. Thus, we exclude this variable from the further analysis.

The evolution of the confidence in the healthcare system, from the first wave to the second, is presented in Table 3 below:

Table 3

Wave * Confidence in the Healthcare System Cross-tabulation

Count						
		Confidence: Healthcare System				Total
		A great deal	Quite a lot	Not very much	None at all	
Wave	1994-1999	151	378	497	162	1,188
	2005-2007	64	412	752	396	1,624
Total		215	790	1,249	558	2,812

It can be noticed a clear decrease in trust, as the percentage of those who have little or no trust in the system is of 55.4% between 1994 and 1999, and of 70.6% between 2005 and 2007. One of the factors may be the improved access to information, which lead to a double-check of the opinions on the healthcare system, and to a better diffusion of both satisfactory and unsatisfactory experiences.

The cross-tabulation relating to the evolution of confidence in the internet is shown in Table 4:

Table 4

Wave * Confidence in the internet Cross-tabulation

Count						
		Confidence: Internet				Total
		A great deal	Quite a lot	Not very much	None at all	
Wave	1994-1999	107	480	496	117	1,200
	2005-2007	153	780	642	149	1,724
Total		260	1,260	1,138	266	2,924

It can be noticed an increase in the confidence in the internet, from the first wave to the second, as 54.11% of the sample are confident and very confident in the internet in 2005-2007, as compared to only 42.9%, during 1994-1999. Numbers show that, while the access to internet has surely increased, from 1999 to 2005, the filtering abilities of those using the internet, that is, information literacy, have also increased, to a certain extent, which explains the rather moderate difference in percentages. This idea is supported by a significant (two-tailed) correlation of 0.065 between confidence in the internet and the frequency of its use, as an information source. Thus, people who trust the internet are the ones who use it most.

A correlation analysis of the two types of confidence, in the healthcare system and in the internet shows that they are positively correlated (0.270, two-tailed). The increase in trust in the internet, on the background of the increase in its use, may, then, explain, at least in part, the decrease in trust in healthcare, as negative messages and uncertainty are more likely to propagate over the internet. For sure, a limitation to our approach is the lack of information regarding the content of internet searches, and a clear referral to the browsing of health-related sites, and to the trust confined to them. A primary data collection, in a further research, will eliminate this methodological gap.

It can be seen that, at least for the second wave, for which data exists in the EVS survey, the attitude towards science and technology, and their influence on everyday life is generally positive, as people in the sample tend to think that their lives are better due to science and technology progress:

Table 5

Wave * Science and technology are making our lives healthier, easier, and more comfortable Crosstabulation

Count												
		Science and technology are making our lives healthier, easier and more comfortable										Total
		Completely disagree	2	3	4	5	6	7	8	9	Completely agree	
Wave	2005-2007	44	27	28	48	141	95	215	306	224	459	1,587
Total		44	27	28	48	141	95	215	306	224	459	1,587

In an enumeration of the things which make Romanians proud of their country, health appears at the bottom of the list:

Table 6

Frequency analysis of things making Romanians proud of their country

		Valid Percent
Valid	Science	27.1
	Politics	6.2
	Sports	10.6
	Culture	25.7
	Economy	6.1
	Health	6.4
	Long history	6.7
	Language	1.3
	None	9.9
	Total	100.0

It can be seen that only about 6% of Romanians think that healthcare would be a reason of being proud of their country. All the other state systems are above healthcare, in this hierarchy, which indicates a low level of trust, from the institutional point of view. Items below healthcare are related to some more symbolic realities, not institutional, which entitles us to say that healthcare is actually the last, in the state systems' hierarchy, from the point of view of trust.

The results of the factorial analysis, having confidence in healthcare as a selection variable, are shown in Table 7 below:

Table 7

Factors of confidence in healthcare

	Component	
	1	2
Most people can be trusted	.632	-.057
Confidence: internet	.683	.255
Science and technology are making our lives healthier, easier, and more comfortable	-.492	.562
Information source: Internet, Email	.170	.819
Extraction Method: Principal Component Analysis.		
a. 2 components extracted.		

The analysis outlined two factors. The first one includes variables related to confidence, namely *general predisposition to trust*, and *specific trust*, related to the information received via internet. The second one includes variables related to scientific, not specifically healthcare (due to the data collecting limitations mentioned above), literacy, namely *belief in progress* and *internet use*. The two outlined factors from the analysis illustrate the two directions leading to trust in the healthcare system:

the willingness to trust, and the willingness to be updated to the scientific environment and tools.

For sure, more specific data regarding the combination of internet-related sources of healthcare information, as compared to other sources, and their respective weights and dynamics, are to be added, in order to get a more comprehensive picture of what trust in healthcare means, and how it can be influenced.

4. Conclusions

The analysis revealed a decrease in confidence in the healthcare system, from the first wave of survey to the second, on the background of an increase of internet literacy, and a better access to information.

Based on the correlations between the variables, the low level of trust in the healthcare system can be explained, to a certain extent, by this improved access to discussion groups, articles, opinions. The absorption capacity, *i.e.*, the degree of literacy in comprehending the messages made available via the internet, is still difficult to measure.

The factorial analysis revealed that there are two components of confidence in healthcare. One related to confidence, in general, as well as in information diffused over the internet, the other one related to the premises of literacy, which are the general belief in scientific progress, and in science and technology's beneficial role in society, and the habitual use of internet.

The main limitations of the study arise from the data collected, which, in large survey as the EVS, was quite general in scope, not serving at its best this niche approach. Further research should, then, be based on primary data, collected by questionnaires, on various categories of public. A record of the personal experiences in the Romanian healthcare system, which would, for sure, influence both the individual level of trust in the system, and others' level of trust, due to the internet repositories of stories and opinions, would be valuable for the analysis. Also, a distinction between using the internet as a source of scientific data (articles, reports) related to healthcare, and using the internet as a source of opinions, more or less trustworthy, on the subject, has, certainly, to be made.

This study, nevertheless, provides a first insight into the matters of trust in a system which scores very low on this aspect, and draws attention to the fact that not only direct experience, and story-telling in the waiting rooms, but also internet archives, and information circulating fast from one beneficiary to another, may contribute to the fluctuations in the level of trust.

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