

First check the internet, then see the doctor : how many patients do it, and who are they?

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Objektyp: **Article**

Zeitschrift: **Studies in Communication Sciences : journal of the Swiss
Association of Communication and Media Research**

Band (Jahr): **11 (2011)**

Heft 2

PDF erstellt am: **31.05.2024**

Persistenter Link: <https://doi.org/10.5169/seals-791201>

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First check the Internet, then see the Doctor: How many Patients do it, and who are they?

This study reports results from a survey of patients in physicians' practices in two different Swiss metropolitan areas, Berne and Lugano. The main focus of the survey was health information behavior, especially with regard to the Internet, and patients' use of the Internet for finding information on the condition they're seeking medical advice for. About one-fourth of patients were found to be condition-informed by the Internet at the time of consultation. This is largely independent of gender, but more frequent in the younger age groups and the better educated. Patients can be divided into information-behavior types such as health information seekers, chance finders, overlookers, and avoiders. Use of the Internet is predictably related to these types, as is the use of other media for health information with regard to patients' present conditions. This suggests a need to examine the relationship of Internet information-seeking behavior with other relevant behaviors. There are hints indicating that patients who were better reached by traditional information channels are also those who turn more often to the Internet for health information. However all in all, evidence for this is rather weak.

Keywords: health communication, health information exchange in doctor-patient consultation, health information seeking behavior on the internet.

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1. Introduction

In recent years, research has addressed medical patients' use of the Internet to acquire information related to medical conditions they may have. Of particular concern was the issue of whether and how patients' Internet use affects the relationship between patients and health professionals. A recent review of such studies (McMullen 2006) shows that patients do not consider the Internet a replacement for consultations with a physician, but rather as a supplement. They often turn to the Internet *after* consultation or diagnosis, especially serious diagnoses such as cancer (Chen & Siu 2001; Jenkins et al. 2001). Patients as well as physicians appear to react with mixed feelings to opportunities offered by the Internet. As to the consequences for the patient-physician relationship, patients using the Internet to acquire information on their condition can be expected to play a more active role, and may be less easily satisfied with the information offered by health professionals (Anderson 2004).

The Internet is obviously a very different medium than the traditional mass media. Many medical patients, however, brought information about their medical problems to doctors' offices long before the advent of the Internet. Such information may be derived from earlier experiences, the experiences of family and friends, hearsay, newspapers, magazines, television, diverse fictional media like television entertainment or pulp fiction, advertising, and so on. Some of this information may have been correct and helpful, though surely not all. Patients differ in the amount of information they bring and in the relative shares of correct and faulty information they consume with regard to their medical problems. The Internet may have improved patients' opportunities to acquire information, but it has not created the phenomenon of patients arriving to medical consultations with information they've previously acquired via the Internet. From the physicians' side, the information that patients bring to their offices can serve both positive and negative functions. It can be seen as positive when a doctor is able to build upon information to give a patient the necessary facts for making an informed decision. It can be seen as a problem when a patient holds so much false information that a physician must spend valuable time to counter the false conceptions, or when a doctor is perceived as less credible by the patient when his or her expectations are disappointed.

Within the last decade, the Internet has pervaded society to such a degree that it now reaches a large majority of the people living in industrialized countries (European Commission 2010). Research on Internet use shows that medical and health information are among the most commonly explored topics by users (Jeannot et al. 2004; Madden & Fox 2006; Dolan, Iredale & Ameen 2004; Spadaro 2003). This has brought patients to physicians' offices who have found information on their symptoms or illnesses on the Web. Some patients mention their Internet-acquired knowledge in consultation, often without being able to specify the website where the information comes from, or to assess the reliability of this information (Fox & Rainie 2002; Diaz et al. 2005).

The Internet has not just increased the medical information available to patients, it has also offered a new quality to information seeking and the information patients may acquire. There is undoubtedly a great deal of reliable information available on the Web, and it can be discovered with greater ease than searching through libraries or medical publications, for example. Also, when sought, useable information can be found on the Web much faster, and with much less expenditure in terms of time and money than it takes, for instance, to find and pick up an information leaflet on a particular disease. But then, not all medical information on the Web is good. Chatrooms may perpetuate medical myths, and the vested interests of pharmaceutical companies have created sites where the underlying persuasive intent is not always easily recognizable.

The specific qualities of medical information drawn from the Internet notwithstanding, any assessment of the consequences of information obtained by patients should take the full media menu into account. As a first step to such consideration, this paper seeks to define who the Internet-informed patients of two regions in Switzerland are in terms of their communication skills, their general orientation towards health information, and their communicative behavior. Data come from two samples of patients in medical practices in two cantons of Switzerland, the Italian-speaking Ticino ($N = 649$) and the German-speaking Berne ($N = 325$). Patients were handed a self-administered questionnaire upon entering the office. The main purpose of the questionnaire was to recruit participants for a qualitative study of the consultation. The answers in the recruitment questionnaire, however, are also of interest. They are the basis of the analyses presented here.

2. State of Research in the Field

It is a paradox of the information age that the impact of patients' unprecedented access to information on the doctor-patient relationship remains poorly understood. Many of the articles that explore patients' information-seeking behaviors are editorials or opinion pieces, are focused on issues of technology, or have examined very broad topics. There have been relatively few studies of how such information empowers patients (Cline & Haynes 2001; Powell & Clarke 2002; Powell et al. 2003), studies related to the impact of Internet-based information sources on patient decision-making (Gerber & Eiser 2001), or studies exploring the evolution of the doctor-patient relationship in the information age (Anderson et al. 2003). A few articles have focused on the Internet as a source of information, and these provide overviews of the effects or possible effects of the Internet on the doctor-patient relationship (Ball & Lillis 2001; Cline 2003; Eysenbach et al. 1999; Kassirer 2000; Levy & Strombeck 2002).

It is nevertheless clear that a significant number of patients turn to the Internet to get health information (Houston & Allison 2002; Murray et al. 2003a, b; Helft et al. 2003; Diaz et al. 2002; Dolan et al. 2004) and this number is likely to increase (O'Connor & Johanson 2000). Patients frequently report that the quality of the information they found was good (Murray et al. 2003b; Hardey 1999; Diaz et al. 2002; O'Connor & Johanson 2000; Houston & Allison 2002; Gordon et al. 2002; Hellawell et al. 2000; Akerkar et al. 2005), but according to physicians, patients had difficulties in interpreting the information (Wilson 1999; Potts & Wyatt 2002; Chen & Siu 2001; Helft et al. 2003; Tann et al. 2003). A further consideration is that research states that health professionals rarely advise patients in Internet search strategies (Olson et al. 2003; O'Connor & Johanson 2002; Gordon et al. 2002; Diaz et al. 2005). Several studies suggest that information derived from the Internet can have a negative impact on the doctor-patient relationship (Murray et al. 2003a, b; Wilson 1999; Potts & Wyatt 2002; Chen & Siu 2001; Helft et al. 2003; Tann et al. 2003; Pautler et al. 2001; Hardey 1999), especially when it leads to misinformation or patient confusion (Helft et al. 2003), or when the physician does not have the necessary communication skills to deal with such patients or feels challenged (Murray et al. 2003a, b). It is clear that despite

the growth of this important information medium, neither patients nor physicians feel well-positioned to deal with the growing – and often contradictory – amount of health information on the Internet (Murray et al. 2003a, 2003b; Chen & Siu 2001; Tann et al. 2003; Diaz et al. 2002; O'Connor & Johanson 2000; Houston & Allison 2002).

Several articles highlight the specific challenges for health care in the information age (Coiera 1996; Cotten 2001; Jadad 1999; Mullner 2002). There are articles that provide advice to physicians for dealing with Internet-informed patients (Pemberton & Goldblatt 1998), while another focused specifically on the effects of the Internet on cancer patients (Eysenbach 2003). A few articles examined the content of patients' online information searching (Anderson et al. 2003) and the positive and negative effects of Internet information on the doctor-patient relationship (Johnson & Ramaprasad 2000). While it is true that the impact of Internet information on the doctor-patient relationship is a relatively new subject of study, patients have more and older information sources available to them (print or broadcast media, information from other people). Articles that highlight Internet information seeking rarely examine the question of other information sources.

In recent years, a relatively small number of studies on the impact of Internet-derived information in general practice have been published. A cross-sectional survey among 1,050 U.S physicians showed that 44 % of the subjects found that patients bringing information from the Internet influences the physician-patient relationship, most of them (38 % of all) in a positive sense, yet 8 % in a negative sense (Murray et al. 2003a). The quality of the Internet information was thought to be crucial to the nature of its impact. Jones et al. (2001) interviewed clinicians on the issue of well-informed patients. They concluded that clinicians should adapt and strengthen their communication skills in order to meet the patient's need for information. Another issue in recent research is the potential benefit of the Internet for particular subgroups of the population. A lack of necessary material and educational resources will prevent many people from using the Internet for health matters. As a consequence, the social patterning of Internet use is likely to reinforce social inequality in the distribution of health literacy (Kickbusch 2001). On a primary care level, this indicates the need for a particularly active information style suitable

for patients from underprivileged social backgrounds (McKinstry 2000; Davis 2004) in order to compensate for the relative lack of information sources outside medical practice.

Only very few studies looked at the percentage and features of patients who brought information acquired from the Web when showing up for consultation. In a study conducted in April 2001, Gordon et al. (2002) found that, among the patients ($N = 138$) in a Scottish rheumatology clinic who had ever searched the Internet for health information (about one-fourth of the sample), almost all had also done so for their rheumatology-related disease. Ross et al. (2000) found that one in 10 patients with Internet access had used the Internet to find out more about the problem that brought them to a genitourinary clinic in England in 1999. Knowledge on how many and which patients come to physicians bearing Internet-derived information has been scarce so far.

Most of the studies on the impact of Internet information on the doctor-patient relationship have been carried out in Anglo-Saxon countries while only a few studies looked at related issues in Switzerland. One of them (Coulter & Magee 2003) was carried out in eight European countries. It found that 10 % of the respondents (the result is based on a random sample of 1,000 persons per country; people were interviewed by telephone in July 2002) saw the Internet as a source of information about new treatments. This figure, however, masks considerable variation between countries, between age groups and between people with different levels of education. The proportion who sought health information from the Internet had risen to more than 15 % in Sweden, Switzerland and the UK, and nearly one in five people with a university degree saw the Internet as a useful source of health information (Coulter & Magee 2003).

The second study examined the need for health information within the population of the Swiss canton Vaud (Ammann 2000). This population survey ($n = 613$, aged between 18 and 74 years), showed that 18 % of respondents had accessed health-related information on the Internet (4.6 % often, 7.5 % from time to time and 5.7 % rarely). Compared to other media such as the press, television, medical journals and radio, the Internet was the least consulted, but this figure has surely changed since. When researchers considered only individuals who had actively been searching for health information in the last 12 months (47 % of the initial

sample), Internet use was higher. In fact, 25 % said they had used the Internet. However, the major finding of the study was that people from Vaud rated doctors as the preferred source of health information.

The third study (Koller et al. 2001) looked at Swiss German primary care physicians' Internet use for medical purposes ($n = 1103$). The study found that access to the Internet was widespread (75 % of respondents reported having access to the Internet) but only 14 % of respondents reported regularly finding useful medical information on the Internet. In addition, to solve patient-specific problems, most practitioners said they consulted textbooks or colleagues rather than the Internet.

A fourth study (Jeannot et al. 2004) investigated information-seeking on the Web by 1,604 patients of eight medical practices in 2001, with both rural and urban areas included. It found that every tenth patient had used the Internet for medical information-seeking, again a figure that is sure to be higher today.

In summary, Internet use among the Swiss population has increased rapidly in recent years. Swiss patients do use the Internet for health information but view the physician as being the most valuable source of information (Ammann 2000). Finally, Swiss physicians seemed skeptical about the Internet some years ago as they reported they had not found useful information related to medical practices on the Web (Koller et al. 2001).

3. Method

The following results are based on a survey of patients in 21 different practices in the Lugano metropolitan area of Ticino, Switzerland, and 19 different practices in the Berne metropolitan area. The Lugano practices were run by six internists/general practitioners, five gynaecologists, two orthopaedic surgeons, two oncologists, two urologists, one endocrinologist, one rheumatologist, one vascular surgeon and one allergist. The Berne physicians included seven internists, five general practitioners, three dermatologists, two orthopaedic surgeons, one oral surgeon, and one urologist. Data was gathered in three waves, from March–May 2006, in October and November 2006 and from May–September 2007 in Lugano, and from June–August 2006, November 2006–February 2007 and June–August 2007 in Berne.

Questionnaires were handed out to patients on particular days agreed upon with the physician in advance. Respondents were asked to fill in the questionnaires while they were on the premises, and the questionnaires were collected there. They asked about media and Internet use, seeking of health information, trust in different media, self-perceived health communication competence, familiarity with the doctor whose advice was sought, and whether the respondent came for a chronic or acute problem. Socio-demographic variables included gender, age, and education. All in all, there were 28 questions in the longest version of the questionnaire. There was some variation as to the questions based on field periods and sites. This paper reports results only for questions that were asked in both sites and all three waves. Participation was voluntary.

Some results are presented in three steps, corresponding to two filter questions asked before the crucial question about holding Internet-derived information on one's present health problem: (1) Internet experience (rather than access to the Internet), and if that was answered in the affirmative, (2) experience with health information on the Internet, and again in case of a positive answer, (3) the encounter of specific information there that was related to the present visit with the physician. The three questions appeared as follows: "Have you ever used the Internet, that is: Have you ever sat down at a computer and logged in to the Internet?" Those who said yes or did not answer were directed to the question, "Have you ever searched the Internet for health information or come across such information by accident? By health information we mean information on illness but also on prevention and improvement of health." Again, those who said yes or gave no answer were directed to the third and crucial question, "Have you ever searched for (or come across) health information that has to do with the reason why you are seeing a doctor today?"

As this was a write-in survey, many inconsistent answers were given. Recoding policy was to ignore second and third filter replies when a person had said "no" to the first and second filters. Hence, a "no" to the question of general Internet experience overruled any reply a respondent may have given to the subsequent question about searching health information on the Web. If, however, the first and second filters were unanswered, but the second or third answered, a "yes" was substituted in the earlier filter question. Which means if someone had not given an answer to the question

of whether s/he had ever searched for health information, but said yes to the subsequent question about specific health information, s/he was also coded “yes” in the earlier filter.

4. Results

The Berne and the Lugano sample were not similar with respect to socio-demographics and other basic variables. There were many more men in the Berne sample, and more people of the age group of 60 and older. More patients in Berne visited their doctors because of chronic disease, and they were more familiar with particular doctors, that is: the share of those indicating they had seen this doctor many times before was larger. It cannot be decided whether such differences reflect discrepancies in the two cities' populations, in their culture, in customary health care behavior, in the different mix of medical expertise the doctors had, or in any other methodological difference. We will therefore deal with the two research sites separately, for the most part.

The analysis will first address *how many* patients present themselves to their physician after having first checked the Internet for information on their condition. Then three steps follow which aim at describing *who* the condition-informed patients are, first in terms of socio-demographic variables, second in terms of general orientation towards health information, and third in terms of their reachability by traditional health communication channels. The third step (reachability) considers four aspects, health communication skills, trust in health information, use of health-related media content, and general media use.

4.1. Share of Internet-Informed Patients in General

Generally, three in four patients indicated they had had some experience with the Internet. Among those, roughly two-thirds said they had ever searched or incidentally found health information on the Internet before. Based on all respondents, this comes down to a share of slightly above 50 %. Among these, more than every second had searched or found information on the Internet related to the condition behind the visit to the doctor at the time of the survey. Based on all respondents again, the

share is 28 %, with only marginal differences between the Berne data and the Lugano data. As Internet use is similar in other (urban) regions in Switzerland, physicians can expect that every fourth of their patients has encountered Internet information related to the reason for seeking medical advice before entering the practice. Table 1 shows the results for all three steps and the similarity of the research sites in overview.

Information from the Internet may also be transmitted indirectly to patients. A question tapped this by asking, "Has someone else at any time given you information from the Internet on the problem why you are seeing a physician today?" In Berne, the share of patients who answered in the affirmative was 8 %, in Lugano 21 %. This indicates more frequent interpersonal communication of health information derived from the Web in Ticino, as compared to Berne. The people who have received indirect information may also have received direct information by logging on to the Web themselves. This is the case, to a large degree. However, the percentage of patients who have only received Internet information on their present health problem indirectly (that is by other people) comes down to 9 % in Lugano and only 3 % in Berne. This means that in Lugano's medical practices, there are 28 % of patients who hold some information on their present problem that they have gathered from the Internet themselves, in addition to 9 % of patients who have been given information by family and friends. Thus, 37 % of the Lugano patients have had contact (directly or via other people) with Internet information on their present health problem prior to their visits to the doctor. Due to less frequent indirect contact, the figure for Berne is 32 %.

4.2. Sociodemographic Structure of Internet-informed Patients

Generally, men use the Internet more intensely than women, but women are more interested in health issues than men. What do these general observations come down to when Internet-informed patients are considered? Higher Internet use among men appears in our Lugano data, but not in Berne. Contact with health information on the Internet is more frequent among women, both in relative (based on those with Internet experience) and in absolute terms. This is true for both Berne and Ticino patients. Among those who had contact with Internet health informa-

Table 1: Share of Internet-informed Patients in Two Cantons (in percent)

| | Ticino (n = 649) | | | Berne (n = 325) | | | Total (n = 974) | | |
|---|---------------------|----|----|--------------------|----|----|--------------------|----|----|
| Have never been on the Internet | 23 | | | 23 | | | 23 | | |
| Have been on the Internet | 76 | | | 72 | | | 75 | | |
| No reply | 1 | | | 4 | | | 2 | | |
| <i>Among those with Internet experience or no reply</i> | | | | | | | | | |
| Never had contact with health information on the Internet | | 21 | | | 19 | | | 20 | |
| Had contact with health information on the Internet | | 53 | | | 53 | | | 53 | |
| No reply | | 2 | | | – | | | 1 | |
| <i>Among those with contact to health information on the Internet</i> | | | | | | | | | |
| Never had contact with information applying to present health problem | | | 24 | | | 24 | | | 24 |
| Had contact with information applying to present health problem | | | 28 | | | 29 | | | 28 |
| No reply | | | 1 | | | 1 | | | 1 |
| Total | 100 | 76 | 53 | 99 | 72 | 54 | 100 | 74 | 53 |

Differences between cantons significant only with regard to the higher number of “No replies” in Berne to the question about Internet experience. Survey among patients in physicians’ practices. Question wording see text.

tion, men had informed themselves more often than women on their present health problems, again in both cantons. The three steps work in different directions: Men are more likely to use the Internet (at least in Ticino), among Internet users, women are more likely to encounter health information on the Internet, and among those with past encounters with health information, men are more likely to have checked on their present health problem. Interestingly, the different attributes of the steps make the share of Internet-informed patients roughly equal: 27 % of the male and 30 % of the female patients in the Lugano practices had consulted the Internet before they showed up in their doctors’ offices. For Berne, the numbers are 31 % of men and 28 % of women (Table 2).

Table 2: Share of Internet-informed Patients among Men and Women in Two Cantons

| | <i>Ticino</i> | | | | | | <i>Berne</i> | | | | | |
|---|------------------|----|----|--------------------|----|----|------------------|----|----|--------------------|----|----|
| | Men (n = 146) | | | Women (n = 293) | | | Men (n = 153) | | | Women (n = 168) | | |
| Have never been on the Internet | 17 | | | 29 | | | 24 | | | 24 | | |
| Have been on the Internet | 83 | | | 70 | | | 73 | | | 73 | | |
| No reply | – | | | 1 | | | 3 | | | 4 | | |
| <i>Among those with Internet experience or no reply</i> | | | | | | | | | | | | |
| Never had contact with health information on the Internet | | 34 | | | 16 | | | 24 | | | 16 | |
| Had contact with health information on the Internet | | 46 | | | 53 | | | 50 | | | 56 | |
| No reply | | 3 | | | 2 | | | 3 | | | 4 | |
| <i>Among those with contact to health information on the Internet</i> | | | | | | | | | | | | |
| Never had contact with information applying to present health problem | | | 18 | | | 26 | | | 20 | | | 28 |
| Had contact with information applying to present health problem | | | 27 | | | 27 | | | 29 | | | 27 |
| No reply | | | 4 | | | 2 | | | 3 | | | 5 |
| Total | 100 | 83 | 49 | 100 | 71 | 55 | 100 | 77 | 52 | 101 | 76 | 60 |

Survey among patients in physicians' practices. Question wording see text.

Similar analyses were run for age and education. For age, the anticipated differences emerge: The younger the patients, the more they've used the Internet, which means they've more frequently encountered health information online, and the share of those who come to a physician's practice with some knowledge about the medical issue at question derived from the Internet is larger. Educational differences also surface in the expected direction. Patients who have obtained information from the Internet on their present health problem make up 40 % of those with tertiary education (in both Lugano and Berne), 29 % and 26 % (in Lugano and Berne) of those with secondary education, and only 11 % and 19 % of those with obligatory education only (or less).

4.3. Internet-informed Patients' General Orientations towards Health Communication

Checking the Internet before one has an appointment with a doctor is a behavior likely to be related to other health communication behaviors. One way to address such relationships is to bring general orientations toward health information into the picture. Orientations can be conceptualized as follows: People may react differently to health-related content in the mass media. Some will actively seek such content, and we would expect that among those, the share of patients showing up for a consultation with Internet-acquired knowledge on their minds could be especially large. Other people will not seek health information, but will inadvertently encounter it on occasion. A third group may be prone to overlooking health-related content, and still others may even try to avoid it. The orientation towards health-related media content is strongest in the first group and decreases over the second and the third to the lowest level in the fourth. We would expect that health-related media use decreases for the four groups in a similar pattern.

The typology of orientations to health-related content is based on a question asking respondents to select the most appropriate among four items: "I actively seek out health information in the media;" "I come across health information in the media every once in a while;" "I never notice health information in the media;" and "I try to avoid health information in the media as much as I can." These people are defined as seekers, chance finders, overlookers and avoiders.

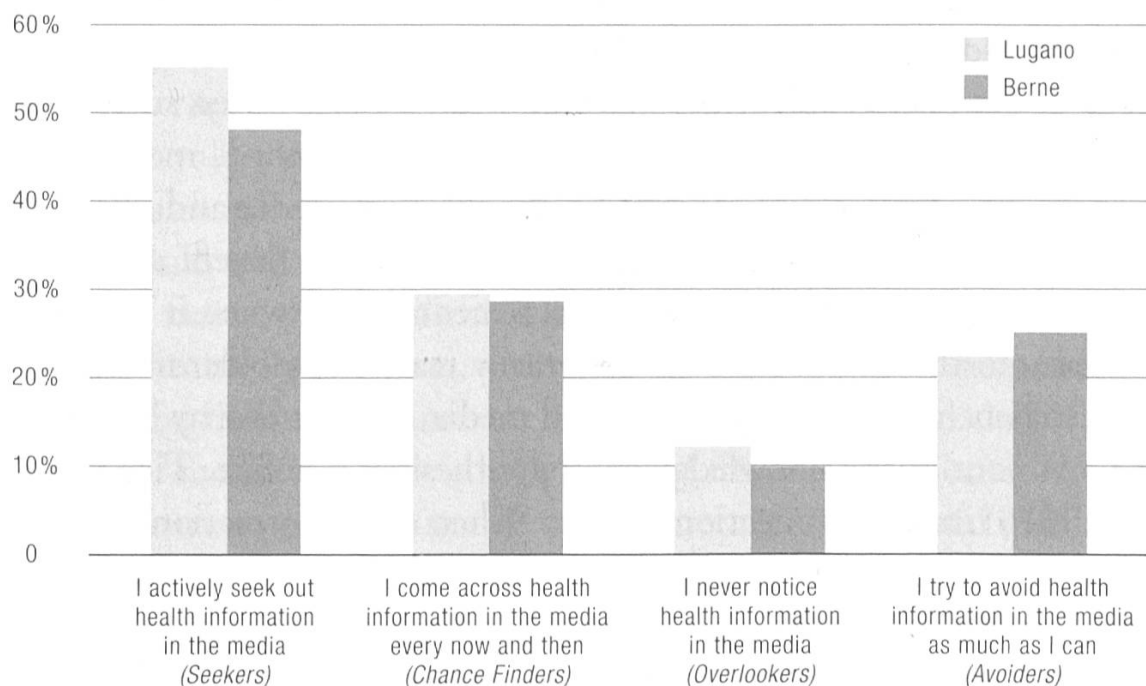
In Lugano, three-fourths of the patients (74 %) were chance finders, choosing the item "I come across health information in the media every now and then." Nine percent said they tried to avoid information (avoiders), another 9 % never noticed it (overlookers), and 8 % indicated they actively sought health information (seekers). The results for Berne patients are similar, except that there were fewer overlookers (3 %) and more chance finders. As would be expected, the typology is by and large unrelated to general media use and to measures of health communication skills (see below). It is, however, related to a question addressing use of health-related content in magazines. The question was: "Many magazines print articles on health and health problems. What would you say, how

many such articles do you read in magazines in a typical week?" Seekers among Lugano patients ($n = 29$) read 2.8 health articles in a week, chance finders 1.6 ($n = 286$), overlookers 0.8 ($n = 23$), and avoiders ($n = 30$) still read 0.6 health articles in a typical week. The difference between the seekers and the chance finders is significant ($t = 3.414$, $df = 313$, $p < .001$), and so is the difference between chance finders and overlookers ($t = 2.474$, $df = 307$, $p < .05$) and chance finders and avoiders ($t = 3.405$, $df = 314$, $p < .001$). Among Berne patients, similar results appear, but are thwarted by a low $n = 8$ for overlookers there. Yet in Berne seekers also read more magazine articles on health (2.8; $n = 23$) than chance finders (1.5, $n = 217$; $t = 3.422$, $df = 238$, $p < .001$), overlookers (0.5, $n = 8$; $t = 2.372$, $df = 29$, $p < .05$) and avoiders (1.0, $n = 24$; $t = 2.666$, $df = 45$, $p < .05$), but the differences between chance finders, overlookers and avoiders are not significant. Health information seekers read more health-related magazine articles than health information chance finders, who read more than overlookers and avoiders, with the latter two differences failing to achieve significance in the Berne data set.

How do the types relate to possessing Internet-acquired information at the time of consultation with a physician? About every second health information seeker shows up for consultation with Internet-gained information. This share sinks to under 30 % for the chance finders, and to about 10 % for the overlookers. Interestingly, more avoiders than overlookers appear to turn to the Web for specific health information. Figure 1 shows the precise results for the two cantons. The percentages are part of 4x4 cross-tabulations, which show highly significant differences for both cantons (Ticino: $\chi^2 = 31.875$, $df = 9$, $p < .001$; Berne: $\chi^2 = 26.213$, $df = 9$, $p < .01$).

Health information seekers do not only turn to the Internet for information on their present condition, but to other media as well. The related question asked: "In the last two weeks, have you heard or read or watched anything in any medium about the health problem that you are seeing the doctor about today?" A positive answer was given by 32 % of the Ticino and 59 % of the Berne information seekers. For chance finders, the percentages are clearly lower, and lower still for overlookers. Again, health information avoiders appear to be more easily reached than overlookers. The percentages are based on 4x3 cross-tabulations, which show highly

Figure 1: Exposure to Internet Information on Present Condition of Different Health Information Seeking Types (Percent of Patients in Physicians' Practices)



significant overall differences (Ticino: $\chi^2 = 17.471$, $df = 6$, $p < .01$, Berne $\chi^2 = 49.644$, $df = 6$, $p < .001$).

The latter results suggest, and it is indeed true, that Internet-informed patients at consultation are also informed about on their present condition by other media. This invokes the old observation that people who use a particular medium for information, tend to use other information media as well (Lazarsfeld et al. 1944; De Waal & Schoenbach 2010). The same can be formulated for entertainment media. This further suggests a need to look at other communication behavior, orientations and abilities and their correlation with being Internet-informed about one's present condition.

4.4. Internet-informed Patients' Reachability by Traditional Health Communication Channels

Every new information medium creates hope that it will help to improve the knowledge of those who have not been well-served by the existing

media or communication structures, or who have not communicated well in the past. In our context, the emergence of eHealth (i.e., the Internet and other interactive technologies) is widely hoped “to enable health improvement and health care services,” for “traditionally underserved populations” in addition to others (Ahern, Kreslake & Phalen 2006; see also Kreps & Neuhauser 2010, Wyatt & Sullivan 2005). Often such hopes are destroyed when it turns out that the new medium is mostly used by those who were easily reached by the existing media and channels. The hope is that the previously difficult-to-reach may benefit most from new information media. The disappointment comes when it turns out that it is mostly the people who were easily reached by older media who will also benefit from newly introduced media. The latter may be considered a variant of the knowledge gap hypothesis (Donohue, Tichenor & Olien 1970) in communication science: When new information is offered by the media, it will be taken up more intensely by people who already know much, while those who know less, absorb a smaller proportion of the new information. Thus both groups will be better informed, but the knowledgeable more so. This creates a wider gap between the (relatively) knowledgeable and the (relatively) ignorant. For the Internet, evidence of the “digital divide” (i.e., inequality in Internet or computer use) resonates with inequalities in health care. Groups who face difficulties in acquiring good health care (disabled persons, rural residents, disadvantaged racial minorities) were found to use the Internet less frequently than other groups with easier access to health care (Wang, Bennett & Probst 2011). The same can be said of persons with low socio-economic status (Kontos, Bennett & Viswanath 2007). It has also been pointed out that benefitting from the promises of eHealth requires particular abilities (called eHealth literacy) that many people do not have (Norman & Skinner 2006).

Our data does not allow for the formal testing of these hypotheses for the case of health information on the Internet. But they provide some hints as to which of the two general hypotheses is more valid, the hope to reach previously uninformed patients or the disappointing finding that health information on the Internet reaches mostly those who are capable of making use of traditional information sources. Four aspects of reachability by traditional channels are considered:

- health communication skills

- trust in health information in traditional media (newspapers, magazines, radio, television)
- use of health information in traditional media (magazines)¹
- general use of traditional media (newspaper, magazines, television).

If the Internet is able to reach the previously difficult-to-reach, lower parameter values on these aspects should go along with higher Internet use for health information. The idea is: People with lower health communication skills will not be in a good position to acquire health information by way of face-to-face communication. They will have a higher demand for more health information, and therefore turn in higher proportion to the new medium of the Internet. Alternately: People who do not trust traditional media will have a high demand for reliable information, and therefore turn to the new source of the Internet. For general media use, the argument could run this way: As all media contain health information, those with lower media use will encounter such information less often than people with higher levels of media use. They will therefore have a higher demand for such information, and consequently turn to the Internet for it.

Conversely, the hypothesis derived from the disappointment of high expectations with regard to new information media would mean, provided the data available in our study, that high levels of Internet use for health information (both general and specifically for the present health problem) in patients would go along with higher parameter values on the four aspects.

These questions were tested, again separately for the two cities. In all ensuing analyses, there are five comparisons: (1) Internet-experienced patients vs. Internet-inexperienced; (2) among the Internet-experienced those holding general health information from the Internet vs. those who do not; (3) among the Internet-health-informed those having contacted information on their present condition on the Internet vs. those who have not. The first three comparisons approach information behavior step by step. Comparison (4) is the gross total comparison of those who are

¹ Magazines are the only medium available for comparison as health information use in television, radio and newspapers was not asked about.

Internet-informed about health in general vs. all who are not (no experience with the Internet or never encountered health information there). Comparison (5) is between those patients who have encountered Internet information on their present condition and those who have not, regardless of the reason (no experience with the Internet or having never encountered general or specific, condition-related health information there). All comparisons are of scale means of the communication variables (skills, trust, use of health-related content, general traditional media use), with t-tests computed for the significance of differences.

Health communication skills – understood in a broad and not technical sense as the capacity of basic comprehension and expression skills in the field of health information (Schulz & Nakamoto, 2006) – were measured with four items: “When you read the instruction leaflet that comes with medicaments, is it your impression that these leaflets are easy to understand?” “When you have a chance to talk quietly with your doctor, how well do you succeed in telling the doctor about your health problem?” “When you do not understand what your doctor said, or when you have doubts about it, is it easy or difficult for you to ask that the doctor explain?” and “When you have a health problem, how well do you normally succeed in explaining to your friends and family what the problem is?” The question about the leaflet offered five response options, the other questions offered four. Items were recoded so that high numbers indicate high skills. For a summary analysis, an index was formed from these items. The 4-item questions were recoded 0, 4, 8 and 12, and the 5-item question 0, 3, 6, 9, and 12. Scale averages were computed for index formation. Respondents with missing values were left out. Factor analysis over all four items resulted in a single-factor solution, but a low Cronbach’s α (.51), which could be increased to .57 if the leaflet item was left out. We will therefore report results for the items separately, but also include an index formed of the other three items.

Data indicate that in Lugano people with higher self-ascribed health communication skills are more likely to have used the Internet. All five scale averages show significant differences (at least on the $p < .10$ -level) in this direction. In Berne no such differences appear (Columns 1 in Tables 3 and 4). Among those who have ever used the Internet, using it for health information seems unrelated to health communication skills.

The majority of differences are in the direction of those with higher skills using the Internet more for health information, but the only significant difference is in the other direction (Column 2 in Tables 3 and 4). Among those who have ever used the Internet for health information, using it for information on the present condition also seems unrelated to health communication skills. The majority of comparisons and the only two significant differences (both from Lugano) suggest rather that it is the less skilled communicators who have used the Internet to learn about their present medical condition (Column 3 in Tables 3 and 4). If general and specific Internet health information users are compared with all others (Columns 4 and 5 in Tables 3 and 4), the differences that appear primarily reflect the very first observation made above: that Lugano patients with high health communication skills are more likely to have experience

Table 3: Communication Skills and Use of the Internet for Health Information (General and Specific) among Lugano Patients

| | All | Ever used the Internet | Among (1): Ever used the Internet for health information | Among (2): Ever used the Internet for infor- mation on present condition | Among all: Ever used the Internet for health infor- mation | Among all: Ever used the Internet for infor- mation on present condition |
|------------------------------------|------|---------------------------|--|--|---|---|
| | | (1) | (2) | (3) | (4) | (5) |
| Skills index | 9.30 | Yes 9.41* | Yes 9.44 | No 9.70* | Yes 9.44+ | No 9.34 |
| | | No 8.92 | No 9.37 | Yes 9.26 | No 9.14 | Yes 9.26 |
| Can relate trouble to doctor | 9.42 | Yes 9.54* | Yes 9.64 | No 9.89 | Yes 9.64* | Yes 9.49 |
| | | No 9.01 | No 9.32 | Yes 9.49 | No 9.17 | No 9.41 |
| Can relate trouble to relatives | 8.65 | Yes 8.79* | No 8.93 | No 8.97 | Yes 8.77 | No 8.68 |
| | | No 8.17 | Yes 8.77 | Yes 8.60 | No 8.53 | Yes 8.60 |
| Easy to ask doctor questions | 9.68 | Yes 9.79+ | Yes 9.84 | No 10.25* | Yes 9.84 | No 9.76 |
| | | No 9.30 | No 9.70 | Yes 9.55 | No 9.49 | Yes 9.55 |
| Leaflet easy to understand | 8.01 | Yes 8.17** | Yes 8.24 | No 8.26 | Yes 8.24* | Yes 8.17 |
| | | No 7.47 | No 8.05 | Yes 8.17 | No 7.76 | No 7.93 |

High scale values indicate higher skills, values run from 0 to 12. Yes/No refers to the column entries. Yes > No suggests higher skills go along with higher Internet use. No > Yes suggests the opposite. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

Table 4: Communication Skills and Use of the Internet for Health Information (General and Specific) among Berne Patients, including Summary of Lugano and Berne Results

| | All | Ever used the Internet | | Among (1): Ever used the Internet for health information | | Among (2): Ever used the Internet for information on present condition | | Among all: Ever used the Internet for health information | | Among all: Ever used the Internet for information on present condition | |
|---------------------------------|-----|------------------------|-----------------|--|-----------------|--|----------|--|----------|--|----------|
| | | (1) | | (2) | | (3) | | (4) | | (5) | |
| Skills index | | 9.32 | No 9.46 | No 9.40 | Yes 9.23 | No 9.23 | Yes 9.23 | No 9.46 | No 9.36 | Yes 9.23 | Yes 9.23 |
| | | | Yes 9.26 | Yes 9.23 | No 9.23 | Yes 9.23 | No 9.23 | Yes 9.23 | Yes 9.23 | No 9.36 | No 9.36 |
| Can relate trouble to doctor | | 9.75 | No 10.05 | Yes 9.66 | Yes 9.70 | No 9.58 | Yes 9.66 | No 9.86 | No 9.76 | Yes 9.70 | Yes 9.70 |
| | | | Yes 9.63 | No 9.57 | No 9.58 | Yes 9.66 | No 9.86 | Yes 9.70 | Yes 9.70 | No 9.76 | No 9.76 |
| Can relate trouble to relatives | | 8.50 | No 8.76 | Yes 8.53 | No 8.84 | Yes 8.53 | No 8.59 | Yes 8.53 | No 8.59 | Yes 8.27 | Yes 8.27 |
| | | | Yes 8.44 | No 8.20 | Yes 8.27 | No 8.47 | Yes 8.27 | No 8.47 | Yes 8.27 | No 8.59 | No 8.59 |
| Easy to ask doctor questions | | 9.65 | Yes 9.67 | No 10.45* | Yes 9.62 | No 9.19 | Yes 9.42 | No 9.96+ | No 9.67 | Yes 9.62 | Yes 9.62 |
| | | | No 9.55 | Yes 9.42 | No 9.19 | Yes 9.42 | No 9.62 | Yes 9.42 | Yes 9.62 | No 9.67 | No 9.67 |
| Leaflet easy to understand | | 7.32 | Yes 7.52 | Yes 7.61 | No 7.92 | Yes 7.61+ | Yes 7.40 | No 6.97 | No 7.30 | Yes 7.40 | Yes 7.40 |
| | | | No 6.88 | No 7.25 | Yes 7.40 | No 6.97 | No 7.30 | Yes 7.40 | Yes 7.40 | No 7.30 | No 7.30 |
| Yes > No | | | 7 | 7 | 3 ^{c)} | 7 | 3 | | | | |
| No > Yes | | | 3 ^{c)} | 3 | 7 | 3 ^{c)} | 7 | | | | |
| Yes > No at p < .10 | | | 5 ^{a)} | — | — | 4 | — | | | | |
| No > Yes at p < .10 | | | — | 1 | 2 ^{b)} | 1 | — | | | | |
| Difference not significant | | | 5 | 9 | 8 | 5 | 10 | | | | |

High scale values indicate higher skills, values run from 0 to 12. Yes/No refers to the column entries. Yes > No suggests higher skills go along with higher Internet use. No > Yes suggests the opposite. Summary rows refer to both Berne and Lugano (Table 3) values.

^{a)} All in Lugano; ^{b)} Both in Lugano; ^{c)} All in Berne; + p < .10; * p < .05; ** p < .01; *** p < .001

with the Web. Tables 3 and 4 show all the scale averages and the significance levels of the pairwise comparisons, separately for the two research sites as well as a summary of both in the Berne table. If all 50 comparisons are considered, 27 (9 of them significant at least at p < .10) show a difference that indicates persons with higher health communication skills use

the Internet more for health information, while 23 (4 of them significant) suggest the opposite.

Trust in a message or a source can be considered a condition for the successful conveying of information. The concept, classically divided into concepts of credibility/trustworthiness and perceived competence/expertise (Hovland, Janis & Kelley 1953; Hovland & Weiss 1953), can be defined as “the generalized expectancy that a message received is true and reliable and that the communicator demonstrates competence and honesty by conveying accurate, objective, and complete information” (Renn & Levine 1991: 179). With this concept in mind, respondents’ trust in health information published in the media was measured with the question: “How strongly do you normally trust health information in the media? Please tick the corresponding answer in this table.” The table mentioned five forms of media (television, radio, newspaper, magazines, and the Internet) in the rows. The columns showed a 4-digit verbal scale of always, mostly, sometimes yes – sometimes no, and hardly ever. The scale values were highly correlated, and a factor analysis revealed a single-factor solution explaining 61 % of the variance. Cronbach’s α for a scale of all five items was at .838 and hardly changed when the Internet item was left out. For an index of trust in traditional media, the four values except Internet were averaged, omitting cases with missing values. The index ranged from 1 to 4, with high values indicating high trust. The mean was 2.29.

Trust in health information in traditional media was positively related to the use of the Internet among Berne patients, but not to the use of the Internet for health information in general or specifically for the current problem. But the Internet users’ higher trust surfaces when health information users are compared with all patients (last two rows in Table 5). Among Lugano patients, no relationship between trust in health information provided by the traditional media and Internet use was found, neither for Internet use in general, nor for its use for general or specific health information.

The *use of health information in traditional media* was measured only for magazines. The question appeared as, “Many magazines publish articles on health and health problems. How many such articles do you read in a typical week?” Open answers were averaged for the ensuing analysis. The results are clear: A high consumption of health-related articles in magazines has no relationship with Internet use in general, but in the

Table 5: Trust in Health Information in Traditional Media and Use of Internet for Health Information

| | Trust in media health information among Lugano patients | | | Trust in media health information among Berne patients | | |
|--|---|------|--|--|--------|---|
| Ever used the Internet (1) | No | 2.33 | $t = -0.010$ $df = 454$ $p = .992$ | Yes | 2.28** | $t = 2.844$ $df = 236$ $p = .005$ |
| | Yes | 2.33 | | No | 1.98 | |
| Among (1): Ever used the Internet for health information (2) | No | 2.38 | $t = -0.979$ $df = 371$ $p = .328$ | Yes | 2.31 | $t = 1.145$ $df = 192$ $p = .254$ |
| | Yes | 2.32 | | No | 2.19 | |
| Among (2): Ever used the Internet for information on present condition (3) | No | 2.34 | $t = -0.634$ $df = 279$ $p = .527$ | Yes | 2.32 | $t = 0.436$ $df = 148$ $p = .664$ |
| | Yes | 2.31 | | No | 2.28 | |
| Among all: Ever used the Internet for health information (4) | No | 2.35 | $t = -0.633$ $df = 449$ $p = .527$ | Yes | 2.31** | $t = 2.691$ $df = 240$ $p = .008$ |
| | Yes | 2.32 | | No | 2.08 | |
| Among all: Ever used the Internet for information on present condition (5) | No | 2.35 | $t = -0.770$ $df = 450$ $p = .442$ | Yes | 2.32+ | $t = 1.816$ $df = 241$ $p = .071$ |
| | Yes | 2.31 | | No | 2.17 | |

High scale values indicate higher trust, values run from 1 to 4. Yes/No refers to the row entries. Yes > No suggests higher trust in traditional media goes along with higher Internet use. No > Yes suggests the opposite. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

step-by-step analysis, there is a relationship with the use of Internet health information in general appearing in both cantons, and with having seen information pertaining to the condition which prompted respondents to visit a doctor, showing up in Berne (Table 6).

Finally, *general media use* was taken into consideration. The question asked for frequency of newspaper reading (everyday, almost every day, some time each week, some time each month, hardly ever or never), number of magazines read in a typical week (open) and hours of television use on a weekday. The answers to the newspaper items were recoded so that they reflect the number of days a newspaper is read in a week. The results are clear: Newspaper reading is unrelated to Internet use in general, and unrelated to being health-informed or condition-informed by the Internet in both Lugano and Berne. There is some indication that avid magazine readers among the Berne patients are more likely to be Internet-informed

Table 6: Use of Health Information in Magazines and Use of Internet for Health Information

| | Use of health information in magazines among Lugano patients | | | Use of health information in magazines among Berne patients | | |
|--|--|-------|---|---|-------|---|
| Ever used the Internet (1) | Yes | 1.59 | $t = 0.150$ $df = 373$ $p = .881$ | Yes | 1.58 | $t = 1.035$ $df = 266$ $p = .302$ |
| | No | 1.55 | | No | 1.31 | |
| Among (1): Ever used the Internet for health information (2) | Yes | 1.73* | $t = 2.394$ $df = 302$ $p = .017$ | Yes | 1.74* | $t = 1.996$ $df = 204$ $p = .047$ |
| | No | 1.17 | | No | 1.14 | |
| Among (2): Ever used the Internet for information on present condition (3) | Yes | 1.74 | $t = 0.017$ $df = 229$ $p = .987$ | Yes | 1.93 | $t = 1.436$ $df = 152$ $p = .153$ |
| | No | 1.74 | | No | 1.46 | |
| Among all: Ever used the Internet for health information (4) | Yes | 1.73* | $t = 1.990$ $df = 373$ $p = .047$ | Yes | 1.74* | $T = 2.013$ $df = 270$ $p = .045$ |
| | No | 1.36 | | No | 1.30 | |
| Among all: Ever used the Internet for information on present condition (5) | Yes | 1.74 | $t = 1.180$ $df = 373$ $p = .239$ | Yes | 1.93* | $t = 2.525$ $df = 270$ $p = .012$ |
| | No | 1.51 | | No | 1.35 | |

High scale values indicate higher number of articles read. Yes/No refers to the row entries. Yes > No suggests higher magazine use goes along with higher Internet use. No > Yes suggests the opposite. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

on health in general, in addition to their present condition. And heavy television use among patients in both Berne and Lugano corresponds with a lower probability of Internet use in general, or for health-related matters, or for the individual's present condition (Tables 7 and 8). The effect for television use is to a large degree created by age: Older people watch more television and use the Internet less than younger people.

To summarize: There is more evidence that health information on the Internet is sought or accidentally encountered more often by people who are also reachable for health information over traditional channels. This is the case for Lugano patients with higher health communication skills (as far as general Internet use is concerned), for Berne patients who put high trust in health information in media other than the Internet, again mostly for Internet use in general, and for both Berne and Lugano patients who read many magazine articles on health subjects were also found more likely

Table 7: General Media Use and Use of Internet for Health Information among Lugano Patients

| | Number of days per week that a newspaper is read | | | Number of magazines looked at per week | | | Hours per day spent watching television | | |
|--|--|------|---|--|------|--|---|---------|--|
| Ever used the Internet (1) | Yes | 4.93 | $t = 0.101$ $df = 568$ $p = .920$ | No | 2.51 | $t = -0.975$ $df = 504$ $p = .330$ | No | 2.29*** | $t = -5.126$ $df = 573$ $p < .001$ |
| | No | 4.90 | | Yes | 2.26 | | Yes | 1.65 | |
| Among (1): Ever used the Internet for health information (2) | Yes | 5.03 | $t = 1.109$ $df = 440$ $p = .268$ | Yes | 2.32 | $t = 0.951$ $df = 397$ $p = .342$ | No | 1.81+ | $t = -1.743$ $df = 438$ $p = .082$ |
| | No | 4.76 | | No | 2.09 | | Yes | 1.59 | |
| Among (2): Ever used the Internet for information on present condition (3) | Yes | 5.16 | $t = 0.952$ $df = 308$ $p = .342$ | No | 2.38 | $t = -0.319$ $df = 285$ $p = .750$ | No | 1.65 | $t = -0.845$ $df = 308$ $p = .399$ |
| | No | 4.91 | | Yes | 2.29 | | Yes | 1.53 | |
| Among all: Ever used the Internet for health information (4) | Yes | 5.03 | $t = 0.946$ $df = 567$ $p = .344$ | Yes | 2.32 | $t = 0.075$ $df = 505$ $p = .940$ | No | 2.06*** | $t = -4.480$ $df = 569$ $p < .001$ |
| | No | 4.84 | | No | 2.31 | | Yes | 1.59 | |
| Among all: Ever used the Internet for information on present condition (5) | Yes | 5.16 | $t = 1.454$ $df = 566$ $p = .146$ | No | 2.33 | $t = -0.178$ $df = 504$ $p = .859$ | No | 1.90*** | $t = -3.213$ $df = 572$ $p = .001$ |
| | No | 4.84 | | Yes | 2.29 | | Yes | 1.53 | |

Yes/No refers to the row entries. Yes > No suggests higher media use goes along with higher Internet use. No > Yes suggests the opposite. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

to be health-informed (and in Berne also condition-informed) by the Internet. Correlations in the other direction, indicating that people difficult to reach due to lower communication skills, lower trust in health information, lower use of such information and lower media use are more likely to use the Internet for health information also appear at places, but consistently only for television use, and these are very likely to be spurious.

4.5. Summary of Results

- Three in four patients indicated they had had some experience with the Internet. Among those, roughly two-thirds (or about 50 % of the

Table 8: General Media Use and Use of Internet for Health Information among Berne Patients

| | Number of days per week that a newspaper is read | | | Number of magazines looked at per week | | | Hours per day spent watching television | | |
|--|--|------|--|--|-------|--|---|--------|--|
| Ever used the Internet (1) | Yes | 5.63 | $t = 0.829$ $df = 309$ $p = .408$ | No | 1.60 | $t = -0.006$ $df = 273$ $p = .996$ | No | 1.97** | $t = -3.100$ $df = 306$ $p = .002$ |
| | No | 5.41 | | Yes | 1.60 | | Yes | 1.46 | |
| Among (1): Ever used the Internet for health information (2) | No | 5.82 | $t = -0.893$ $df = 232$ $p = .373$ | Yes | 1.72* | $t = 2.097$ $df = 211$ $p = .037$ | No | 1.49 | $t = -0.209$ $df = 231$ $p = .835$ |
| | Yes | 5.56 | | No | 1.23 | | Yes | 1.45 | |
| Among (2): Ever used the Internet for information on present condition (3) | No | 5.66 | $t = -0.582$ $df = 169$ $p = .562$ | Yes | 1.91 | $t = 1.604$ $df = 157$ $p = .111$ | Yes | 1.50 | $t = 0.453$ $df = 169$ $p = .651$ |
| | Yes | 5.49 | | No | 1.51 | | No | 1.42 | |
| Among all: Ever used the Internet for health information (4) | No | 5.66 | $t = -0.434$ $df = 322$ $p = .664$ | Yes | 1.72 | $t = 1.406$ $df = 278$ $p = .161$ | No | 1.81* | $t = -2.493$ $df = 316$ $p = .013$ |
| | Yes | 5.56 | | No | 1.46 | | Yes | 1.45 | |
| Among all: Ever used the Internet for information on present condition (5) | No | 5.67 | $t = -0.697$ $df = 322$ $p = .486$ | Yes | 1.91* | $t = 2.185$ $df = 278$ $p = .030$ | No | 1.67 | $t = -1.055$ $df = 316$ $p = .292$ |
| | Yes | 5.49 | | No | 1.48 | | Yes | 1.50 | |

Yes/No refers to the row entries. Yes > No suggests higher media use goes along with higher Internet use. No > Yes suggests the opposite. + $p < .10$; * $p < .05$; ** $p < .01$; *** $p < .001$

total sample) said they had ever searched or incidentally found health information on the Internet before. Among these, roughly every second had searched or found information on the Internet that was related to the motive of seeing a doctor at the time of the survey. Based on all respondents again, the share is 28 %.

- Due to a higher frequency of personal communication, the additional share of people to whom Internet-derived health information was transmitted was higher in Lugano than in Berne.
- Men use the Internet more frequently, but women search more often for health information, and male patients for information on their present health-related problem. This creates roughly equal shares of men and

women who show up for consultation with some prior contact to Internet information pertaining to their problem.

- As can be expected, Internet-derived information is much more common for younger and better-educated groups.
- Three-fourths of patients can be typified as chance finders of health information in the media. The remainder is equally distributed (roughly) between types defined as seekers, overlookers and avoiders.
- Seekers more often turn to the Internet for general or specific health information, followed by chance finders, avoiders and overlookers. For other media content, a very similar pattern emerges.
- Patients who can more easily be reached by health messages on traditional channels also turn to the Internet, either generally or specifically, for health information. The scattered evidence on this is related to health communication skills, trust in health information in traditional media, and use of health information in traditional media. All these forces seem at times to increase patients' likelihood to have encountered general or specific health information on the Web. Evidence for the reverse relationship (that Internet health information goes along with low skill, low trust in and low use of traditional media for health information) was weaker.

5. Discussion

Most existing results on the share of Internet-informed patients can hardly be directly compared with ours, due to different research sites, different dates of data collection, and different medical conditions in the patients who were interviewed (Gordon et al. 2002; Ross et al. 2000). The comparison of our results with those by Jeannot et al. (2004), however, at least suggest that between 2001 (Jeannot et al.'s time of data collection) and 2006/07 (our data) the rate of having consulted the Web before a visit to one's doctor has considerably increased. The problems often associated with patients' bringing Internet-based knowledge to medical consultation (Murray et al. 2003a, 2003b; Wilson 1999; Potts & Wyatt 2002; Chen & Siu 2001; Helft et al. 2003; Tann et al. 2003; Pautler et al. 2001; Hardey 1999; Johnson & Ramaprasad 2000) may have increased to a similar degree, but so may have the benefits of Internet information for the

doctor-patient relationship (Murray et al. 2003a). Analysis of the qualitative part of this study showed that most of the interviewed physicians appreciated discussing Internet-derived health information with patients, but also that misleading interpretations by patients and views contrary to those held by the physician caused conflicts during consultations (Sommerhalder et al. 2009). The qualitative analysis of the physicians' interviews further shows that physicians respond to Internet-informed patients in four different ways: by resisting online information (*resistance*), by repairing online information (*repairing*), by constructing a shared reality with the patient starting from the online information (*co-construction*), and by enhancing online information (*enhancement*). Physicians opt for a particular communicative strategy on the basis of their conception of medical information for lay people through the Internet and on the basis of their interpretation of the specific communicative context, that is, their appraisal of the patient's health literacy, the relevance of the online information to be discussed, and their own communicative efficacy (Caiata Zufferey et al. 2010; Caiata-Zufferey & Schulz, under review).

Our results show that for the younger age groups and the better educated it is no longer a small minority that appear in physicians' practices with some Internet-acquired knowledge on their present health problem. To be sure, it is a minority still, but the numbers are approaching 50 %. Among the elderly and those with lower levels of formal schooling, there are fewer patients with Internet-acquired information on their present problem, but among these groups, physicians can expect one or two in ten patients to arrive with such information. As the younger and better educated age cohorts will get older and will thus seek medical advice more often than they do today, we can expect that within a generation, checking the Web first and visiting a doctor afterward will be the rule rather than the exception, provided that the Internet-oriented young generation of today will not lose its penchant for the Web, and also provided that health information on the Internet will continue to prosper. As communication skills grow more important in medical training, the ways of dealing with patients' knowledge derived from the Internet should receive some attention, too.

Information seeking is an activity that has become much easier to engage in since the advent of the Internet, especially when specific information is

sought. Most health information sought by patients is very specific, and any attempt to find such information in traditional mass media (news-papers, magazines, radio, television) would in most cases be completely futile. Practically the only ways to actively seek specific health information in the pre-Internet days were to visit a library, go to a bookstore or ask an expert. The Internet has made active information seeking much easier, and it yields more diverse information and information easier to process than could have been imagined in pre-Internet days. It is therefore not surprising at all that, as our results show, patients who describe themselves as habitual active seekers of health information more often than others consult the Web before seeing their doctor. What is surprising, however, is that roughly every third chance finder of health information as well as every third health information avoider also checked the Internet before seeing their physician. That means that health information is found (and possibly also actively sought) by patients who still do not consider themselves active health information seekers. This can be interpreted as indication of the fact that the Internet as an easily available information-seeking medium in the field of health is not yet as salient in everyday thinking and behavior as might be expected. Positive experience with Internet-derived health knowledge (within and without medical consultation) will likely augment this salience and further increase the number of patients who present themselves at their doctor after having consulted the Web.

Finally, the plotting of hopes (that the use of health information from the Web might balance out social inequality based in traditional ways of informing people about health) against a disappointment perspective (that holds that the Internet as a new medium will benefit those who already benefitted from older media) did not yield much support for the hope perspective. The analyses presented here provide more support for the assumption that it is mostly patients who can more easily be reached by health messages on traditional channels who also turn to the Internet, either generally or specifically, for health information. In other words: There is more evidence for the disappointment than for the hope interpretation sketched above. This is true especially for hopes that a social divide in health care can be bridged by the Internet. Rather we have to assume that health-related aspects of the digital divide will persevere, an expectation that has also been noted in the literature (Wang, Bennett & Probst

2011; Kontos, Bennett & Viswanath 2007; Norman & Skinner 2006). The finding implies that in whatever way the possibility of checking the Internet before one sees one's doctor will change health care in general and medical consultation in particular, this will not likely to be similar for all types of patients. Increasing gaps between well-informed, misinformed and uninformed patients will pose new challenges to physicians, who may have to face increasing problems in assessing their patients' state of knowledge on their condition. But caution needs to be applied here as the results are inconsistent when the two research sites are compared, as evidence to the contrary also appears, and as no differences emerge in many comparisons. The link between Internet health communication behavior (both general and specific) with reachability by traditional channels is weak at best. But still, there is little grounds for hope that those patients will benefit from the Internet who have so far been disadvantaged in their chances to acquire health information.

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Submitted: 14 June 2010. Resubmitted: 19 January 2011. Resubmitted: 25 February 2011. Accepted: 17 March 2011. Refereed anonymously.

