German healthcare consumer’s perception of the internet as a source of health related information

Roxana Corina Dumitru, Thomas Ganslandt, Hans-Ulrich Prokosch
Department of Medical Informatics, Friedrich-Alexander-University, Erlangen, Germany

Abstract

Objective: To determine the extent to which German healthcare consumers seek health related information online and their perceived importance of the internet, as compared to other sources of health information.

Research design. Computer-assisted telephone interviews through which surveys were conducted concomitantly in seven European countries, including Germany. The instrument of the survey was a questionnaire designed in English and subsequently translated in German using a dual focus approach.

Subjects. A household sample generated by random digit dialling, including 975 individuals (age 15-80).

Outcome. Internet was used by 72.1% respondents, 73.5% of whom (53.2% of the total sample) looked for health related information. The importance of internet was rated rather low in comparison with other sources of health related information, while direct contact with healthcare professionals was deemed the most important source of health information by all socio-demographic groups considered, regardless of whether they used the internet or not.

Keywords:
Internet, healthcare

Introduction

Internet is the biggest medical library in the world. It has transformed the way many health seekers find health information [1] and it has attracted considerable attention as a potential tool to enhancing patient empowerment [1-4]. The number of people using the internet has exponentially increased in the later years and internet has become a favoured source to find health information. Worldwide, about 4.5% of all internet searches are for health related information [5]. Some studies examined patterns of use and perception of the internet by people with certain chronic diseases (e.g., diabetes, hypertension, cancer, heart problems, depression [6], orthopaedic problems [7]). Other studies explored the perception of people from certain age groups (e.g., adolescents) [8], or of people with certain medical conditions [9], towards the internet as a source for health related information, in the context of the other health information sources that were available to them. However those studies addressed only certain segments of the population, which were already using the internet, or were instructed to do so, but did not provide with any estimates for the general population.

Several large scale surveys of the general population assessing the use of the internet for health related information were conducted in the US [10-14] in the last years, but only one in Germany [15]. Most surveys of the general population conducted in the US have also explored the perceived usefulness (or importance) of the internet as compared to other sources of health related information [11-13]. In Germany this aspect has not been explored.

National surveys investigating these important aspects should be repeated at regular intervals and they should be coordinated in such a way that they may also be expanded at an international level to enable meaningful comparisons of the consumers’ perception and use of the internet for health related purposes. Such studies should constitute the basis for any focus policy discussions or design of appropriate policy activities [15], [16].

The current study is part of a larger EU study focussed on the “new patients and consumers” and the digital divide in Europe which investigated the health consumers’ use of, attitudes towards, and preferences in respect with, information and communication technologies for health purposes.

Methods and instruments

The national survey here described was conducted in Germany in October 2005. The instrument of the survey was a questionnaire developed in English (the master EU questionnaire) by an international group of professionals with various backgrounds (sociology, medicine, psychology, medical informatics, eHealth), piloted on 100 individuals and subsequently translated in German using the “dual focus method” [17]. Because of the particularity of the educational system in Germany, rating pupils and students by a schema where lower numbers represent higher rates (e.g., higher achievements), to avoid bias in the interviewing process, the Likert scales from the master European questionnaire were reversed in the German version of the questionnaire. After the completion of the interviewing the dataset collected from the participants was recoded to bring the scales in line with those endorsed in the master EU questionnaire (e.g., lower numbers on a scale represent less of an attribute such as importance, frequency etc).
The questionnaire was administered by a national poll agency (Field Facts Germany GmbH) to 1001 subjects during computer assisted telephone interviews (CATIs). The phone numbers used, included private telephone numbers both residential (fixed lines) and cell phones, and they were pulled using an Equal Probability Selection Method from a national Random Digit Dial telephone sample, derived from a national telephone directory. The selection of the target subjects from the household contacted was based on the “last birthday” method [18]. The average time length of a CATI was 13 minutes. Of the 1001 interviewed subjects, 26 were excluded because of incomplete or invalid answers. Thus, 975 valid and complete records of German consumers, age 15-80, were eventually retained for data analysis. Before proceeding with the data analysis the sample was also compared with the most recent German national micro-census data [19] to check its representativeness for the German population age 15-80. To correct for minor discrepancies between the sample data and the census data, statistical weighting for age, gender and education was employed.

Results

Of the 975 Germans (age 15-80), 393 were males and 582 females. In this paper we report on the results of the survey based on weighted data.

Internet use

As many as 72.1% of the participants have reportedly used the internet at least once, and 73.5% of all the internet users reported seeking online health related information.

Rating the importance of different sources of health related information

All participants were asked to rate different sources of health related information. On a five-point Likert scale from 1 (not important) to 5 (important) the lowest average rates were given to the courses and lectures (2.63), followed by the internet (2.86), TV/radio (3.41), newspapers and magazines (3.45), pharmacies (3.50), books, medical encyclopaedias or leaflets (3.57), family, friends and colleagues (3.57) and direct, face to face, contact with health professionals (4.28), the later being rated by far as the most important source of health related information. A complete summary of these rates is shown in figure 1.

Rating the importance of the internet according to some socio-demographic factors of the respondents and to their use of the internet

The differences between the various socio-demographic, in the way they rated the importance of the internet, were also explored. On a Likert scale from 1 (not important) to 5 (important) the rates of importance given to the internet were higher for men (average importance rate: 2.95) than for women (2.77). Younger citizens (age group 15-49 years) tended to rate the internet a more important source of health related information (3.26) than those in the age group 50-80 years (2.29). Also, people with higher education rated the importance of the internet higher (3.07) than those with education up to high school (2.75). The internet was also considered more important by people with children (3.15), and by people with paid work (3.11), than those without children (2.68) and those without paid work (2.57), respectively. People living in city areas rated the importance of the internet somewhat higher (2.93) than people from rural areas (2.74). Citizens considering their health as good or very good rated the importance of the internet higher (3.95) than those reporting fair, bad or very bad health (2.68). Finally, the users of the internet rated its importance considerably higher (3.26) than those who had never used the internet (1.79). Amongst the internet users, those seeking online health related information every day, every week or every month (the frequent seekers) rated the importance of the internet higher (3.89) than those seeking such information online only every 6 month, every year ore less than once a year (occasional seekers: 3.24), and more so than those who had never sought health related information online (no seekers: 2.49). These results, stratified by the different socio-demographic groups, are summarized in figure 2.

Rating the importance of the direct contact with their healthcare professional according to socio-demographic factors and internet use

The differences between the various socio-demographic, in the way they rated the importance of the direct contact with their healthcare professional as a source of health related information, were also explored.

On a Likert scale from 1 (not important) to 5 (important) the rates of importance given to the contact with own healthcare professionals were somewhat higher for women (average importance rate: 4.33) than for men (4.23). Older citizens (age group 50-80 years) tended to rate the direct contact with their healthcare professionals a more important source of health related information (4.30) than those in the age group 15-49 years (4.11). Also, people with lower education (up to high school) rated the importance of direct contact with their own health professional somewhat higher (4.30) than those with higher education (4.23). Direct contact with own healthcare professional was also considered more important by people with children (4.40), and by people with paid work (4.30), than those without children (4.20), and those without paid work (4.25), respectively. People living in city areas rated the importance of the direct contact with their own healthcare professional somewhat higher (4.30) than those from rural areas (4.25). There was little difference in the rating of the importance of the direct contact with own healthcare professionals between citizens considering their health as good or very good (4.28) and those considering their health as fair, bad or very bad (4.26). Finally those who had never used the internet rated the direct contact with their own health professionals less important (4.15) than the frequent seekers of health related information online (4.30). However the frequent seekers of health related information online rated the direct, face to face contact with their own healthcare professionals as less important than the occasional seekers of health related information online (4.43).
These results, stratified by the different socio-demographic groups, are summarized in figure 3.

**Discussion**

The national survey conducted in Germany in October 2005 showed that almost three quarters (72.1%) of the German population between 15 and 80 years of age used the internet, with almost three quarters (73.1%) of the internet users reportedly looking for online health related information. This is a significant increase in the use of the internet, in general, and for health related information, in the last 5 years in Germany, considering that a study published in 2004, which reported on a national survey conducted in 2001 [15] found that only about a half (51.5%) of the Germans (age 14+) were using the internet at the time and only little over a half of the internet users (53%) reported seeking online health related information.

Our survey shows that currently the proportion of internet users in Germany is about the same with that in the US, if taking into account the most recent survey published in the US [14], while the proportion of internet users seeking online health information is greater in Germany (73.5%) than in the US (56%).

Overall, despite their high rate of internet use, German consumers rated the importance of internet as a source of health related information amongst the lowest, in comparison with the rates they gave to other sources for such information (e.g., internet was rated only the second lowest, after courses and lectures). Each of the demographic groups considered, and even the internet users, rated the internet as one of the least important source relative to other sources of health related information (figure 2). These findings are similar with the results of a Californian survey published in 1999, which showed that the internet had been ranked as the fifth (from six) most useful source of health information, by both the overall sample, and by those using the internet [10]. The findings of a US national survey, published in 2005, which explored the level of trust of consumers in various sources of health related information on cancer, placed the importance of the internet amongst consumers somewhat higher relative to other sources, yet still far lower than the trust in the physician [13].

Our survey revealed that only the internet users who reported seeking health related information online deemed the internet as a somewhat important source of such information (giving an average importance rate of 3.89, on a five point Likert scale of importance for the internet). As far as the socio-demographic factors concern, it appears that the strongest influence on the way the internet, as a source of health related information, was rated were (in decreasing order of their influence): age (people between 15-49 years of age tended to rate the importance of the internet higher than those aged 50-80), employment (people with a paid job tended to rate the importance of the internet higher than those without a paid job), children in the household (people with, tended to rate the importance of internet somewhat higher than those without, children in the household). A lesser influence on the way internet was rated had the gender, urbanization and even the health condition (subjective) of the respondents.

Direct, face to face, contact with healthcare professionals was rated as the single most important source of health information relative to the other sources considered, regardless of gender, age, education, urbanization, employment status, status of health, children in the household, regardless of whether they were internet users or not and irrespective of whether they sought online health related information or not (figure 3).

This finding is in line with both the Californian survey published in 1999 [10], which showed that physicians were the single most important source of health information for all age groups irrespective of gender, ethnicity/race, age annual income, and with those of the US “first health information national trends survey”, published in 2005, which also deemed physicians as the most highly trusted information source to patients [13].

**Conclusions and Outlook**

The current German survey, as well as three other somewhat similar consecutive surveys conducted in the US between 1999 and 2005, showed that the use of the internet by healthcare consumers is on the rise and so is its use for seeking health related information. However this wide spread of the internet use does not translate into changes of the way German consumers perceive the more traditional sources of health related information such as: TV/radio, books, medical encyclopaedias, leaflets, newspapers and magazines, family, friends and colleagues, pharmacies, and more especially direct contact with their healthcare professionals. Direct, face to face, contact with own physician or other healthcare professional was rated by the German consumers as the most important source of health related information, irrespective of their gender, age, education, urbanization, employment, health status and even regardless of whether they used the internet or not, or had looked for health related information online or not.

**Acknowledgments**

The data reported in this paper is part of the project "WHO/European survey on eHealth consumer trends", funded by the European Commission. Seven countries participate in the project; lead partner is the Norwegian Centre for Telemedicine (NST).

**References**


Adress for correspondence
Roxana Corina Dumitru, Lehrstuhl fuer Medizinische Informatik Krankenhausstr. 12 D-91054 Erlangen Germany corina.dumitru@imi.med.uni-erlangen.de

![Figure 1. Average rates of importance given by healthcare consumers to different sources of health related information](image)

**Sources of information related to health or illness**

<table>
<thead>
<tr>
<th>Importance</th>
<th>Lectures</th>
<th>Internet</th>
<th>TV/radio</th>
<th>Newspapers, magazines</th>
<th>farmacies</th>
<th>books, medical encyclopaedias, leaflets</th>
<th>family, friends, colleagues, direct contact with own HCP</th>
</tr>
</thead>
<tbody>
<tr>
<td>2.63 (S.D. = 1.27)</td>
<td>2.86 (S.D. = 1.44)</td>
<td>3.41 (S.D. = 1.13)</td>
<td>3.45 (S.D. = 1.10)</td>
<td>3.50 (S.D. = 1.24)</td>
<td>3.57 (S.D. = 1.17)</td>
<td>3.57 (S.D. = 1.09)</td>
<td>4.28 (S.D. = 1.05)</td>
</tr>
</tbody>
</table>

*S.D. = standard deviation, HCP = healthcare professionals*
Figure 2. Average rates of importance given by different consumers groups to the internet as a source of health information

*S.D. = standard deviation*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Group</th>
<th>Mean ± S.D.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gender</td>
<td>men</td>
<td>2.95 ± 1.38</td>
</tr>
<tr>
<td></td>
<td>women</td>
<td>2.77 ± 1.49</td>
</tr>
<tr>
<td>Age</td>
<td>15-49 years</td>
<td>3.26 ± 1.30</td>
</tr>
<tr>
<td></td>
<td>50-80 years</td>
<td>2.29 ± 1.44</td>
</tr>
<tr>
<td>Education</td>
<td>higher education</td>
<td>3.07 ± 1.32</td>
</tr>
<tr>
<td></td>
<td>lower education</td>
<td>2.75 ± 1.48</td>
</tr>
<tr>
<td>Children &lt;18 yrs in household</td>
<td>yes</td>
<td>3.15 ± 1.35</td>
</tr>
<tr>
<td></td>
<td>no</td>
<td>2.68 ± 1.47</td>
</tr>
<tr>
<td>Urbanization</td>
<td>city areas (≥ 20 000 inhabitants)</td>
<td>2.93 ± 1.42</td>
</tr>
<tr>
<td></td>
<td>rural areas (&lt; 20 000 inhabitants)</td>
<td>2.74 ± 1.46</td>
</tr>
<tr>
<td>Employment</td>
<td>with paid work</td>
<td>3.11 ± 1.40</td>
</tr>
<tr>
<td></td>
<td>without paid work</td>
<td>2.57 ± 1.51</td>
</tr>
<tr>
<td>Health status (subjective)</td>
<td>good or very good</td>
<td>2.95 ± 1.40</td>
</tr>
<tr>
<td></td>
<td>fair, bad or very bad</td>
<td>2.63 ± 1.51</td>
</tr>
<tr>
<td>Internet use</td>
<td>yes</td>
<td>3.26 ± 1.29</td>
</tr>
<tr>
<td></td>
<td>no</td>
<td>1.79 ± 1.26</td>
</tr>
<tr>
<td>Online seeker of health related information</td>
<td>frequent seeker</td>
<td>3.89 ± 1.10</td>
</tr>
<tr>
<td></td>
<td>occasional seeker</td>
<td>3.24 ± 1.19</td>
</tr>
<tr>
<td></td>
<td>no seeking</td>
<td>2.49 ± 1.37</td>
</tr>
</tbody>
</table>

Figure 3. Average rates of importance given by different consumers groups to direct contact with own healthcare professionals as source of health information

*S.D. = standard deviation*