Internet as a source of medicines information (MI) among frequent internet users

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ABSTRACT

Background: The internet is widely and increasingly used to search for health information. Previous studies have focused mainly on health information on the internet and not specifically on medicines information (MI).
Objectives: The aim of this study was to explore the internet as a source of MI compared to other sources of MI; to identify those who use the internet as a source of MI; and to describe patterns of use of the internet as a source of MI.
Methods: A cross-sectional design employed a web-based questionnaire posted by patients' and other organizations as well as pharmacies on their websites during six weeks in the beginning of 2014. Logistic regression analysis was used to assess associations of background variables to the use of different MI sources.
Results: The most frequently used MI sources among respondents (n = 2489) were package leaflets (90%), pharmacists (83%), physicians (72%), and the internet (68%). According to a multivariate analysis, internet use for MI was associated with female gender, age < 65 years, higher education, daily use of the internet, and continuous use of vitamins or herbals. MI was most commonly searched from a Finnish health portal (56%) and websites of pharmacies (41%). Of the respondents, nearly half (43%) used search engines to find information from the internet. The names of the medicinal product, symptom or disease were the most commonly used search terms.
Conclusions: Well-educated, young women tend to search MI on the internet. Health care professionals should discuss reliable MI websites and tools that can help patients evaluate the reliability of information.

1. Introduction

The internet is widely and increasingly used to search for health and medicines information.[1–5] Medicines information is among the most commonly searched topics of health information online along with searching information about a specific disease or medical problem or and self-management issues such as weight loss or weight control.[5] In Finland, 9–20% of the medicines users had used the internet to access information on their medicines.[6–8] Based on the results of previous research, however, an interpretation can be made that the internet is not replacing health care professionals as a source of health and medicines information.[2,3,6,8] Instead, it has been recognized that the internet is often used to complement other sources.[7,9]

Previous research suggests that finding and assessing relevant information from the internet is problematic, which may limit its utility as a source of health and medicines information.[10,11] Barriers acknowledged in previous research include intrinsic factors such as limited consumer eHealth literacy and extrinsic factors such as inconsistency of information that can be found from different websites.[11] Both instrinsic and extrinsic barriers may lead to negative outcomes, such as following advice obtained from unreliable information or ambiguity of patients regarding what information to believe. People also differ in their health and medicines information needs and seeking behaviour.[12] The internet may be especially valuable for some patient groups and in situations when, for example, fear of stigmatization and disease-related symptoms limit information-seeking from other sources.[9] Factors associated with internet use for health information include younger age, female gender and higher education.[1–3,5,13,14] Internet access and having good skills in using the internet have also an impact on health information searches from the internet.[1] People living in cities, having better incomes, Caucasian, and having a long-term illness[14] seem also to have an increased frequency of internet use for health-related purposes.[2,5]

Previous studies have focused mainly on health information in the

internet. Less is known about internet use and associated factors for medicines information. Previous studies have focused on describing internet use for MI in general, comparing the use of the internet with other MI sources and assessing the association of internet use by age and gender.[6,15,16] Furthermore, some studies have focused on the use of internet as MI source among people with some specific patient groups, such as mental illness, diabetes, high blood pressure and high cholesterol.[7,9,17,18] More research is needed so as to comprehensively identify those groups who are the most active users of the online MI and who may especially benefit from internet-based MI sources and services in terms of sociodemographic factors (broader than gender and age), health status, and medicine use. This will help to focus development of internet-based MI sources and services for these groups.

In Finland, increasing rational medicine use with quality medicines information targeted at consumers is one of the main strategic goals identified in the current National Medicines Policy.[19] To achieve this goal, the Ministry of Social Affairs and Health mandated the Finnish Medicines Agency (FIMEA) to develop a national Medicines Information Strategy[20,21] which sets out six strategic objectives aiming to advance the quality of MI for both health care professionals and the medicine users.

In order to implement the MI strategy, the Medicines Information Network was established. One of the five working groups (WG) of this network focuses on developing MI for patients. To base its work on the current knowledge, this WG conducted a survey to discover medicine users' MI needs and sources.

The aim of this study was to 1) explore the internet as a source of medicines information compared to other sources of MI among frequent internet users, 2) identify those who use the internet as a source of medicines information, and 3) describe patterns of use of the internet as a source of medicines information.

2. Methods

2.1. Context

There are several oral, written, and electronic MI sources targeted at medicine users in Finland. Physicians and pharmacists are by law required to counsel patients.[22,23] Every medicine package includes a package leaflet, which is mandatory in all European Union Member States.[24] These leaflets are also available via the internet. Additional MI sources for patients are a well-known electronic MI source for patients is a Finnish health portal called "Terveyskirjasto" by The Finnish Medical Society Duodecim. They also publish Current Care Guidelines with patient summaries. Furthermore, there are three nationwide call centres which give information related to medicines: the Drug Information Centre operated by the University Pharmacy; the Teratology Information Service and Poison Information Centre by Helsinki; and Uusimaa Hospital District HUS. Moreover, patient organizations, authorities, pharmacies and the pharmaceutical industry provide written and electronic MI to patients who desire to seek additional MI.

2.2. Study design

A self-administered internet-based questionnaire was posted by patient (n = 18) and other organizations (n = 7) involved in the Medicines Information Network as well as pharmacies (n = 87) around Finland on their websites and distributed to persons from various affiliated e-mail lists. Other organizations included, for example, The Consumer's Union of Finland and Finnish Pharmacists' Association. The number of organizations may be even higher than these numbers, as FIMEA on its website encouraged all interested parties to forward this survey. The study aimed to reach relatively frequent internet users and explore how they search for medicines information – and to elicit responses from both chronically ill people as well as from healthy people using medicines occasionally. The questionnaire was accessible for

approximately 6 weeks during the period 20th January 2014–28th February 2014. Everyone who had used or was using medicines was invited to respond to the survey.

The questionnaire was piloted by 42 medicine users to accertain face and content validity. Modifications were made based on the responses received, including adding options in some structured questions. During the pilot, the usability and technical functionality of the electronic questionnaire were also tested. Adaptive questioning was used to reduce the number and complexity of the questions.

The questionnaire was comprised of 46 questions, of which three were open questions. The topics were related to different information sources used; situations when medicines information is needed; needs for additional information about medicines; and experiences of using different information sources. The questions were formulated by the research group based on the information needed for the work of the Medicines Information Network. In this study, the focus is on the questions related to the internet as a source of medicines information.

The participants were asked to read the study description together with the study objectives and other relevant information. Answering the survey was considered as giving informed consent. No personal identifiable information was collected, and the study followed the national ethical guidelines for researchers. In Finland, there is no obligation to seek ethical approval for conducting anonymous questionnaire studies.[25]

2.3. Main outcome measures

Use of the internet for MI was assessed with the question, "Have you searched for information about medicines from the internet?". Thus, internet use as medicines information-seeking was sought on a general level, and not for specific drugs. The respondents who indicated that they had used it (n = 2189) were further asked which internet websites they had searched. A list of different options was provided, and the respondent was also given an opportunity to add other options (Fig. 2). Options included "the use of a search engine, e.g., Google" and, if this was chosen, the respondent was asked with an open question to give some examples of search terms used. The qualitative data from the open question was thematically categorized and quantified.

In order to compare the internet as a source of MI with other MI sources, a list of 14 different sources (Fig. 1) were presented and the respondents were asked to indicate how much they had used each source for information concerning medicines on a 4-point, Likert-type scale (3 = much, 2 = to some extent, 1 = little, 0 = not at all).

2.4. Background variables

The following background variables were included: gender, age, area of residence, education, internet use, belonging to a patient organization, long-term illness, number of prescription medicines in use, number of OTC-medicines in use, and the use of vitamins and herbal remedies. These variables were chosen to be able to adjust internet use as a MI source for sociodemographic background, health status, and medicine use.

2.5. Statistical analysis

Data were analysed by using SPSS for Windows, Release 21 (SPSS Inc., Chigaco, ILL, USA). Pearson's Chi-squared test was used to explore the bivariate associations between categorical variables in cross tabulations. The p-value of < 0.05 was considered to be statistically significant.

To determine the adjusted odds ratios (ORs) for the associations of background variables to the use of different information sources, logistic regression analyses were conducted separately for each of the information sources. The results are presented as ORs together with their 95% confidence intervals (CIs). The stepwise method (backward