The Importance of Selected Criteria for Assessing the Credibility of Information on the Internet from the Perspective of Users Searching Health and Disease Information Websites

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Abstract

Aim. The aim of the survey was to find out how and why users of websites containing health information searched for information, how they feel about selected criteria for assessing the credibility of information, and what they are more likely to trust when they encounter a discrepancy between information from the website and from a doctor.

Methods. An online survey of users of 4 health information websites, two of which are listed as trusted sites on MedLike. The respondents assessed 10 criteria for determining the trustworthiness of online information and websites by assigning a number of stars (5 stars = important).

Results. The questionnaire was answered by 32,428 respondents (79.5% women, average age 47 years). The most frequently cited reasons for seeking information were their own health or illness (49%). Most respondents searched for information through an Internet search engine (66%). The importance of the criteria for selecting information did not differ significantly. The respondents gave the highest score (2.29) to the criterion of *ease* (*I can easily find what I need*). This was followed by *consistency with information from the doctor* (2.28).

Conclusion. The respondents searched for information in the way described in the literature as most common (using a search engine) and tended towards a heuristic evaluation of online information and its sources (ease of information retrieval) and also appreciated if the information found concurred with information from a healthcare professional.

Keywords: health literacy, information literacy, Internet, online health information, quality assessment criteria

Ethical aspects

This type of research does not require ethical committee approval, and therefore it was not requested. Respondents participated in the survey voluntarily. The questionnaire was set up so as not to unduly inconvenience users of the selected sites. It was placed on the selected websites with the consent of the website operator. The authors are not motivated by financial interest and are not aware of any conflict of interest.

Introduction

The availability of the Internet is steadily increasing in the Czech Republic. According to a report from the World Internet Project (WIP) (Cole et al. 2017), the number of Internet users in the Czech Republic increased from 35.3% of the population in 2005 to 81.3% in 2015, 79% of the 1,316 respondents over 15 years of age have searched for health information online, and 74% rated the Internet as an important or very important source of information, making the Internet one of the most accessible sources of information, including information concerning health and disease. According to data from the Czech Statistical Office (CZSO, 2020), 56.5% of Internet users aged

16-74 searched health information, with a significant majority of women (62.7%).

Michael Bliemel and Khaled Hassanein (2007) state that the reason for searching for information on the Internet is to seek information when it is scarce from healthcare professionals, as well as to make decisions about medication, treatment and lifestyle choices. In this context, the finding in the WIP report that 45% of the respondents considered most or all of the information from websites to be reliable is alarming. (Cole et al., 2017) The information obtained can influence their decision-making concerning their treatment (Meric et al., 2002), which can be very risky or even life-threatening (Liao & Fu, 2014). According to Ardion Beldad et al. (2010), trust in information on the Internet depends on both culture and experience with the Internet.

With the onset of the Covid-19 pandemic, many areas of life have moved online. The topic of the quality of health information available on the Internet has been very much alive for several decades, not only abroad but also in the Czech Republic (Macháčková & Smahel, 2018; Pleskot & Rusová, 2018; Rusová & Pleskot, 2020), and with the need for reliable and correct information in the time of the Covid-19 pandemic, it has certainly become even more relevant.

One approach to evaluating the information on the Web is the criteria checklist approach, used mainly in academic settings. An overview of the applicable criteria can be found, for example, in the review article by Asad Ali Shah et al. (2015) or Yan Zhang et al. (2015). These criteria are also applicable for evaluating the quality of websites containing health information (e.g. disclosure of the owner of the site, the name of the author given and date of publication and/or update). However, because of the difficulty of the evaluation process according to such a list, the question is whether and how these criteria are actually used by Internet users in their everyday use outside the academic environment (Eysenbach & Köhler 2002, Haider & Sundin 2020). Bliemel and Hassanein (2007) also point out the difference in approach to assessing information quality between experts and laymen users.

Information search is guided by personal experience. Information literacy is crucial, and critical thinking plays a significant role (Haider & Sundin 2020; van Zyl et al., 2020). Information literacy includes an understanding of the whole system of thinking and information flows (Haider & Sundin, 2020).

When dealing with health information, health literacy is also essential. Health literacy is defined as "the personal characteristics and social resources needed for individuals and communities to access, understand, appraise and use information and services to make decisions about health" (Rowlands et al., 2017, p. 130). Low levels of health literacy make impossible to recognize information that may be dangerous. According to Yeolib Kim (2016), health literacy also influences the assessment of the credibility of

information from the web. The more information a user has about a given issue (including personal experience with the disease), the more likely they are to know what information or services they need, which in turn influences their search strategy (Eysenbach, 2007).

The beginning of efforts to address the trustworthiness of information on the Internet is linked to the promotion of information literacy (Shah et al. 2015). One strategy used is to increase information literacy through (self-)education, where users learn what to look out for and what criteria can be used (Haider & Sundin 2020). The responsibility for evaluating resources and information here lies with the individual, including critical evaluation of assessment tools (Haider & Sundin 2020).

On the other hand, Miriam Metzger (2007) emphasises that the evaluation of information resources should be a social responsibility rather than an individual endeavour. The creation of websites/portals with verified information under the auspices of various organisations expresses this attitude; an example is the MedLike portal (a project of the National Library of Medicine), which, among other things, creates a list of trustworthy websites with information on health and disease.

The MedLike web portal, available on the National Library of Medicine (NLK) website, was created to promote health literacy among the general public (NLK, MedLike, n.d.). This portal also list trustworthy websites. These sites are assessed by a team from NLK according to predetermined criteria, which can also be found on the NLK website under the heading of *Methodology for Assessing the Quality of Resources*. More information on the development of the MedLike portal and the methodology for document review is provided by Eva Lesenková (2016). An important piece of information is that even sources for which it is not possible to obtain all the information needed for the assessment according to all criteria are included, if they are considered "informationally valuable" by the NLK team (NLK, MedLike, n.d.).

Research Objectives

The aim of the survey was to find out how and why users of websites on health and disease searched for information, how they feel about selected criteria for assessing the credibility of online information and resources, and what they are more likely to trust when they encounter a discrepancy between online information and information from a doctor or a healthcare professional.

Methodology

To obtain the necessary information, a questionnaire of our own design was placed on selected health-related websites. Due to the need to use the

shortest possible version of the questionnaire, only eight questions were used, three of which are identification questions (gender, age and education). Two questions then contained individual criteria against which the quality of the resources could be judged.

For the purpose of this questionnaire, the following criteria were selected: *ease of navigation on the website*, *text without grammatical and stylistic errors*, *indication of the author of the text*, *the author being a physician/healthcare*, *a professional review of the paper* (e.g. MedLike portal), *date of publication* and *indication of sources*. This is a deliberate selection that was also designed to reflect the criteria used by NLK to assess the credibility of sources. Respondents were asked to what extent the credibility of the information is influenced by the consistency of the information with information on other sites, with information from healthcare professionals, and with their opinions. The respondents were also asked what they would do in case they encounter a discrepancy between information from a doctor/healthcare professional and information obtained from the sites.

The questionnaire was placed on 4 websites, which will be marked with the letters A to D to preserve anonymity. Two of these websites (A and C) are listed as trusted sources on MedLike (valid as of 11/11/2021). The descriptions of the websites were obtained from the sites themselves, and a brief evaluation by one of the authors of the article and a follow-up by another of them were performed. For this evaluation, which focused on the classic criteria used to assess the quality of information on the Web in an academic setting (*author*, *date of publication and update*, *indication of sources used*, and *review*), a topic appearing on all four sites was selected: breast cancer. The findings are included in the characterization of the websites, see below.

Website A is a portal under the auspices of one of the sections of the Czech Medical Society of J. E. Purkyně, containing information on a certain range of diseases and prevention of these diseases for patients and their next of kin, as well as doctors and the entire multidisciplinary team. The questionnaire was placed in the section containing information for patients and their relatives. Papers usually include the author (but not all), for some papers also the reviewer, the date of publication and/or date of update, and for some the sources used. The author is usually a physician or another expert on the subject, and when you click on the author's name, a user can see the profile with contact details and publications.

Evaluation of an article on breast cancer on website A – authors are physicians, the reviewer is a physician, it was created in 2006 and revised in 2014, no sources are listed, the topic of breast cancer in pregnancy – the author is a physician, the reviewer is a physician, it was created in 2010, 15 sources were listed from 2005 – 2009.

Website B presents itself as a discussion and advice platform for women (combined with an online bazaar). The website does not offer contact details of the administrators, limiting itself to the information that it is "managed

by a team of people". The website contains, among other things, chat groups for women, discussion forums (where the life experience is shared) and counselling chat rooms. In the individual counselling chat rooms, female users' questions are answered by experts (name, brief introduction and photograph). There are also links to other resources (encyclopaedias with expert articles). For the posts (answers) in this part of the site, the author is listed, the date of publication and update are missing, and sources and links to discussions on the topic are not always provided. The website also contains advertisements in various formats.

Evaluation of the article on breast cancer on website B - no author or date of publication or review is given, two sources are given, one is an article about breast cancer on Wikipedia and the other is a link to an article on the website vitalion.cz, operated by the media company Mafra, for which no author, date of publication or sources are given.

Website C presents itself as a "database of symptoms and indications of common diseases", there is also a health magazine with articles on various topics. The dates of publication and the authors are given for these articles, but no sources. For the articles under the symptoms and diseases tab, only the author is listed, no contact information is given for the authors, and there is only one e-mail address in the contacts section of the website to which general questions and comments about the content can be sent. The website includes a warning that the information is not a substitute for a consultation with a treating physician. A large space is taken up by advertisements.

Evaluation of an article on breast cancer on the website C: only the author is given, no publication/revision date, no sources are given.

Website D has a different character than previous websites, it presents itself as an online magazine that serves for pleasure, saves time, helps, advises and looks for ways to make life easier and according to the information from the website has an average of 800 thousand readers per month. A large media house controls the website. The authors' contact details are not given, only the telephone numbers and e-mail addresses of the media house and the contact details of the editorial office. Advertisements are present in the form of banners. In the health section, articles are displayed without a sorting option, presumably from the most recent posts on into the history. Using the search option located in the top bar, after typing "breast cancer", three links to other sites appear with the ad tagged, and then several more or less relevant articles covering the topic of breast cancer in some way.

The questionnaire was placed in a separate pop-up window and a delay of 2 s was set for it to appear after the page opened. In order not to annoy the user of the site with the continuous appearance of the questionnaire, it was set to appear maximally twice for one unique IP address. However, it was not possible to prevent the questionnaire from reappearing to the same respondent if they visited another of the three websites where our questionnaire was placed. The survey was carried out during 2020.

The average return rate of completed questionnaires for all sites was 3.2%. The highest return rate was approximately 4.3% from website A, while the lowest was 1.9% on website B, 3.5% on website C and 3.1% on website D. Within the evaluation of each question, there is information on the number of questionnaires where a particular question was not answered or where an inadequate figure was given. For respondents' age, values less than 15 and greater than 99 were considered inadequate data. However, an inadequate entry in an individual question was not a reason for discarding the questionnaire.

Working with the data: in this paper, the answers to the identification questions will be used to illustrate the concept of the respondent population only, the data will be viewed through the individual sites. For each criterion, respondents assigned stars (points) from 0 to 5, the average score is the arithmetic mean. For the criterion *text was reviewed by an expert*, the difference between the mean of site A and sites B, C, D was tested using a two-sample t-test with equality of variances.

Results

Respondents' Profile

A total of 32,428 respondents answered the questionnaires. Women make up 79.5%, men 20.5%. Most respondents are aged 30-49 (13,297, or 41%), with an average age of 47 years. In terms of education, the highest number of respondents had a secondary education with a high school diploma (37%), while the lowest number of respondents had primary education only (6%).

How the Respondents Chose the Website

Respondents were asked about how they reached the website on which they completed their questionnaire. The majority, 66% of all respondents, used a search engine. 12% of respondents clicked on a link on another website or social networks, 11% of respondents went directly to a site they know and use, 2% of respondents went to the site based on a recommendation and 1% of respondents chose another option, see Table 1. These respondents were asked to fill in the information. Here, for example, answers "I was interested in the headline, the article was in the menu of ..." (posts on the homepage), "In my pregnancy certificate or From the TV show ..." were added.

The search engine was the first choice given by the largest number of respondents on all sites, but there are differences in other answers. Website B stands out significantly; the second most frequent answer was "I know and use this site" (22% of respondents from website B). The second most frequent way of arriving at website D was clicking on a link on another site/social network (17% of respondents from website D), significantly

more than users of the other sites. These are sites that target women and are not on the MedLike list. In contrast, websites A and C, which are on the MedLike list, the choice via search engine dominates strongly, with all other options being mentioned only in units of percentages.

Table 1

Respondents answering "How did you get to this website?"

		web A	web B	web C	web D	Total
Via a search engine	N	2435	5289	4710	9003	21437
(Google, Seznam etc.)	%	79.5%	56.1%	77.0%	65.1%	66.1%
Directly, I know / I use	N	130	2092	150	1243	3615
this website	%	4.2%	22.2%	2.5%	9.0%	11.1%
Directly, the website was	N	81	260	80	198	619
recommended to me	%	2.6%	2.8%	1.3%	1.4%	1.9%
I clicked here from other	N	197	773	391	2413	3774
sites / social networks	%	6.4%	8.2%	6.4%	17.5%	11.6%
Other	N	220	1008	785	970	2983
	%	7.2%	10.7%	12.8%	7.0%	9.2%
Total	N	3063	9422	6116	13827	*32428*
	%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: own research.

Reasons for Search

Respondents were also asked why they searched for information on a particular page or website. The most common reason for seeking information was the respondent's own health or illness; 49% of all respondents chose this answer. A further 20% of all respondents sought information because of the health or illness of next to kin. 7.5% sought information because of their profession and 3% because of their studies. The option *other* with an open-ended answer was chosen by 5.5% of the respondents (e.g. "to check a report prepared by a student", "I randomly clicked on a link"). The remaining 15% of respondents did not specify the reason for their search. In the case of Website C, it was 30% of respondents.

Searching for information because of one's own health or illness is represented differently across sites: 57% respondents on Website D, 55% on Website C, 42% on Website A, and 36 % on Website B.

For the respondents who search for health information because of their studies or profession, we were also interested in the extent to which they search on websites they know and use, or that have been recommended to them. Search engine use was prevalent for this group of respondents - in the case of searching for study reasons, this option was even more prevalent compared to the overall number (75% for study reasons compared to 66% overall). When searching for information because of their profession, 60% of respondents used a search engine. Only a minority of respondents

searching for studies searched on sites they already knew (7.6%) or that had been recommended to them (4.7%). In the case of searching because of their profession, 16.6% of respondents chose a site they knew, and 3.5% of respondents reported visiting a site based on a recommendation.

Discrepancy of Information

Attention was paid to how respondents make decisions when they encounter a discrepancy between what they have been told by a doctor/healthcare professional and what they read on the Internet. Across all sites, the most represented responses were "I will find out from other sources" and "I will trust the information from the doctor/healthcare professional", which together accounted for more than 75% across all sites. Other responses were in the minority and comparably represented across all sites, see Table 2.

Table 2

Respondents' answers to the question "If there is a discrepancy between what a doctor/healthcare professional tells you and what you read on the Internet, then what do you most likely do?"

		web A	web B	web C	web D	Total
I gather information from other sources (internet, books, people, etc.) and then I decide	N	1356	3868	2127	6810	14161
	%	44.3%	41.1%	34.8%	49.3%	43.7%
I trust the information from the doctor/a healthcare professional	N	1150	3211	2448	4771	11580
	%	37.5%	34.1%	40.0%	34.5%	35.7%
I trust the information on the website	N	83	293	190	291	857
	%	2.7%	3.1%	3.1%	2.1%	2.6%
If there is a discrepancy, I cannot decide	N	129	342	244	477	1192
	%	4.2%	3.6%	4.0%	3.4%	3.7%
Other	N	24	97	45	178	344
	%	0.8%	1.0%	0.7%	1.3%	1.1%
n/a	N	321	1611	1062	1300	4294
	%	10.5%	17.1%	17.4%	9.4%	13.2%
Total	N	3063	9422	6116	13827	*32428*
	%	100.0%	100.0%	100.0%	100.0%	100.0%

Source: own research.

Evaluation of the Importance of the Criteria

Respondents were further asked about a total of 10 selected criteria and their importance in assessing the credibility of information from websites. The question was, "When do you consider information obtained from a website to be credible?" and respondents were asked to evaluate the importance of the criteria by assigning an appropriate number of star ratings (0 - not important to 5 - very important).

Summary of the Evaluation of the Criteria

The average score assigned to each criterion did not even reach 2.5 for any of them, i.e. half of the five-point scale of importance. The average values for each criterion are shown in Table 3.

Table 3
The average values for each criterion

	Criterion	Average score
1.	I can easily find what I need on the website	2.29 p.
2.	consistency with the information from the doctor/healthcare professional	2.28 p.
3.	the author of the text is a doctor/healthcare professional	2.14 p.
4.	the sources are cited	2.06 p.
5.	consistency with information from other websites	2.03 p.
6.	the text has been reviewed by an expert	1.96 p.
7. - 9.	no grammatical or stylistic errors in the text	1.82 p.
7. - 9.	the author of the text is given	1.82 p.
7. - 9.	consistency with respondents' opinions	1.82 p.
10.	the date of the publication is given	1.53 p.

Source: own research.

Extreme values of the criteria

A total of 4,924 respondents (15.2%) assigned zero points to all the criteria submitted, i.e. they did not award any of the criteria even one point out of possible five. The representation of these respondents varied greatly from site to site: 52% of respondents from Website A, 13.86% from Website B, 27.22% from Website C and only 2.47% from Website D.

The second extreme option, 5 points for all criteria offered, was chosen by 632 (1.95%) respondents.

Omission of outliers, i.e., responses from respondents who gave 0 points for all the criteria or, conversely, 5 points for all the criteria, does not lead to a change in the order of importance of the criteria. Therefore, these values are also taken into account.

The Only Chosen Criterion

A total of 1,428 respondents (4.40% of the total) gave 1 or more points to only one of the 10 proposed criteria. Although this is a very small proportion of respondents, we can see here the importance of the criteria for those users who consider only one criterion and disregard the others (indicated by the % of respondents who chose the criterion), see Table 4.

Table 4

The percentage of respondents who selected the criterion as the only one

	Criterion	% of respondents
1.	I can easily find what I need on the website	38.7
2.	consistency with respondents' opinions	11.9
3.	the author of the text is a doctor/healthcare professional	10.1
4.	consistency with information from other websites	9.0
5.	consistency with the information from the doctor/healthcare professional	8.1
6.	the text has been reviewed by an expert	6.4
7.	the sources are cited	5.5
8.	the author of the text is given	3.8
9.	the date of the publication is given	3.4
10.	no grammatical and stylistic errors in the text	3.2

Source: own research.

Differences in the assessment of the importance of the criteria

Despite the minimal differences in average scores between the criteria, some specificities can be observed.

Website A was statistically significantly more highly ranked than the other websites for the criterion *text was reviewed by an expert*. It was found to be the third most important criterion with 2.39 points (the most important criterion *consistency with information from a doctor/healthcare professional* with 2.64 points, followed by the criterion *author is a doctor/healthcare professional* with 2.46 points).

The criterion *the text has been reviewed by an expert* was the most important for those respondents who used website A for searching for their studies (3.23 p.) and those who accessed the website directly, because they know it and use it (3.3 p.).

The order of importance of the criteria in the whole set does not differ according to how the respondents got to the website, the order of the criteria is still the same. When comparing the individual sites in the assessment of users who know and use the particular website, we note a difference for website A (see the previous point) and also the average scores assigned to the most important criteria appear higher.

Users of website D, in comparison to the other websites, made minimal differences in the evaluation of the first 4 most important criteria (in the same order as in the overall results) - the difference was only 0.1 points, the values ranged from 2.29 to 2.19. These 4 criteria were significantly more appreciated by the respondents than the other criteria.

In respondents who sought information for their studies and because of their profession, we targeted the analysis on the criteria *the author of the text is given* and *the date of the publication is given*. Even in this subset, *the date of*

publication was ranked last in importance. However, the criterion of *mentioning the author* was ranked slightly higher (it was ranked 6th for study and 5th for profession).

The respondents who trusted the information from the web more when there was a discrepancy between the information from the web and the information from the doctor/healthcare professional rated the most important criterion "I can easily find what I need on the website" (3 pts.), well ahead of the other criteria, with the next in order being "consistency with respondent's opinions" (1.9 pts.), and then "consistency with information from other websites" (1.7 pts.). The respondents who trusted information from a medical professional was the most important criterion "consistency with information from a doctor/healthcare professional" (2.7 pts.). Interestingly, for respondents who indicated that "they could not make up their minds in case of a discrepancy, the most important criterion was the absence of grammatical and stylistic errors" (2.2 pts.).

Discussion

The submitted research focuses on how users search for information on health and disease on the Internet and how they evaluate its quality. The search process is an integral part of information evaluation and has an impact on how users evaluate what they find (Haider & Sundin, 2020; Hargittai, et al. 2010; Westerwick, 2013).

On a site that was recommended to users, 2% of the total respondents in our study completed the questionnaire. The extent to which we trust the person (or institution) who recommended the site is reflected in our assessment of the trustworthiness of the website and the information on it. Jutta Haider and Olof Sundin (2020) describe the impact of teacher recommendations on students. Based on teacher recommendations, students blindly trusted information from the National Encyclopaedia (a Swedish online commercial encyclopaedia) even when they came across something that did not make sense to them. Beldad et al. (2010) found that trust depends on culture, and on experience with the Internet. People who are new to the Internet trust the Internet more than experienced users.

11% of the total of our respondents said they knew and used the sites they visited. Elizabeth Sillence et al. (2006) describe the features of sites that lead users to return repeatedly and use them for a long time. These are personalised content, interactivity, updated content and user-generated content. These characteristics are most consistent with Site B, and it is consistent with this that the highest proportion (22%) of respondents said they know and use the site compared to other sites.

According to Axel Westerwick (2013), the majority of users use Internet search engines to search the Internet; according to Astrid Mager (2009), the most commonly used search engine is Google. Also in our survey, the

vast majority of respondents accessed the site where they completed the questionnaire via a search engine. This was 66% of all respondents.

If we look at the importance of each criterion from the perspective of respondents who searched for information via the Internet search engine and from the perspective of those who searched on sites they are familiar with. On website A, which is under the umbrella of a professional medical society, for the group of those who know and use the site, the most important criterion was *reviewed by an expert*, with a fairly substantial average score of 3.3 points.

Jan Brophy and David Bawden (2005) compared Google searches with library database searches to assess the relevance and strengths and weaknesses of both systems. They found Google to be superior in terms of coverage and accessibility, while the library systems produced better quality results. Based on their findings, the authors recommend a combination of both systems. Among the respondents in our study, 7.5% were those who searched for information because of their profession and 3% for their studies. 75%, i.e. the vast majority of respondents who searched for information for their studies, searched via an Internet search engine. Among the respondents who searched for information because of their profession, almost 60% of them used an Internet search engine. Anyway, this group of respondents had a different view of the importance of each criterion compared to respondents who searched for information because of their health/disease or because of the health/disease of the next of kin, as they prefer the criterion of *reviewed by an expert*, while the second group prefers *the ease of finding information*.

Internet search engine users usually browse the links from the results list in descending order. Some users believe that links to the best websites are placed at the top, others do so because it is pragmatic (Mager, 2009; Westerwick, 2013). According to Hana Macháčková and David Smahel (2018), users stop searching when they have satisfied their needs (the satisfaction principle), even though they may not have searched all sources and found the best information, which in practice may mean that they limit their search to the first links in the list of results offered by the search engine.

Using only the first few results when searching for health/disease information can lead to bias due to random inclusion of information, so some information may not be retrieved (Liao & Fu 2014). However, deliberately ignoring some information is also part of heuristic approaches (Materska, 2014). According to Gerd Gigerenzer and Wolfgang Gaissmaier (2011), ignoring some information can lead to more accurate assessments than considering all information.

According to Funda Meric et al. (2002), which pages are displayed on the first positions in searches and which ones users click on most often (click popularity) is a result of artificial marketing manipulation. According to Mager (2009), search engines redirect people to highly funded, mainstream sites and professionally maintained sites make better use of links

and search engine algorithms for their purposes. Three of the sites in this survey are among the top 20 most influential sites in terms of "click popularity" in a list created by Jitka Rusová and Ondřej Pleskot (2020) and thus have significant potential to influence Internet users in the Czech Republic.

In the Haider and Sundin (2020) survey, respondents had varying levels of insight into how search engines work. Often their ideas were very limited and idealised, and many had not given it any thought until the interview. In the perception of some respondents, it is Google that does the critical evaluation of sources, not the user performing the search.

A vague understanding of how search engines such as Google work (offering the best possible and therefore most up-to-date search results) may explain why the least important criterion for credibility in the survey was *the date of publication* (average 1.53 points). Date of publication or date of update is one of the basic criteria for assessing the quality of information on websites. At the same time, it is seen as an indication of information being up-to-date. The lack of up-to-date information on Czech health websites is one of the problems highlighted by Rusová and Pleskot (2020), where up-to-date information on dietary measures for gout was provided on only one of the seven websites evaluated.

Already the respondents of Gunter Eysenbach and Christian Köhler (2002) stated that searching for information on the Internet is very useful, as it provides them with another source of information besides literature and their doctor and they can easily learn about alternatives. They reported that they can compare the information obtained from different sites with each other and may find conflicting information. Respondents in our survey were asked what they are likely to do if they encounter a discrepancy between what a doctor or a healthcare professional tells them and what they find on the web. The majority of respondents (43.7%) said that they find information from other sources (Internet, books, people, etc.) and then make a decision. 35.7% said that they trust the information from the doctor/healthcare professional and 3.7% said that they cannot decide in such a case. However, 857 respondents (2.6% of the total) indicated that they trust information from the website in such a case. This is also the group of people for whom the most important criterion offered was *ease of search*, which can cause many problems with the much-discussed quality of information on the Internet. This may have implications for cooperation with healthcare professionals and may have serious consequences for their health, especially if they are respondents with low health literacy. As mentioned above, the results of the health literacy survey do not look good for the Czech Republic, as we ranked second to last among the EU countries assessed (Kučera et al., 2016).

A limitation of our study (and of all studies of a similar nature based on inquiry, not observation) is that there may not be a match between users' actual Internet search practices and their self-report of engaging in such inquiry. This difference is illustrated by a study conducted by Eysenbach

and Köhler (2002). Participants reported that they focused on the following criteria when evaluating the trustworthiness of websites: resources, professional design, sites of official or scientific institutions, language used, and ease of use; however, observations of respondents during their information searches revealed that no one clicked on "about us" for information about the site owners, and the respondents also searched on sites they were unfamiliar with.

According to Eysenbach and Köhler (2002), Shah et al. (2015) and Haider and Sundin (2020), the way information is retrieved and evaluated also depends on the purpose of the search and the consequences of using incorrect information.

Ann Scholz-Crane (1998) found that in many cases, students used only one criterion when deciding on the quality of a website. In our survey, there were 1428 such respondents (who reported using only one criterion), or 4.40% of the total. Compared to the other subsets, the criterion *information is consistent to my opinions* appeared to be significantly more important here; this criterion was second only to *ease of finding information*.

The criterion of *ease of search* is closely related to page appearance, which is in agreement with the findings of Sillence et al. (2006), who stated that assessing information trustworthiness has several steps, and starts with the evaluation of the first impression and the use of heuristic criteria (appearance, layout, navigation, signs of social identity, and the assessment of advertising). Based on these criteria, some sources are excluded, and the remaining ones are subjected to a systematic evaluation of the content (the language and tone used, the purpose of the pages - both expressed and hidden, the level of information - whether it is for beginners or in-depth on the topic, information about the author in terms of their knowledge and expertise and, last but not least, references/links to other sources).

The criterion of *sources are citing* came in fourth in our survey with a score of 2.06 points. However, among respondents who know and use website D, this was the most important criterion (2.86 points), as well as among respondents of the same site who sought information because of their profession. For the respondents of Eszter Hargittai et al. (2010), it was more important when selecting a link from a list of offered results if the respondents could easily identify the sources than if they knew the owner or sponsor.

References to other sources are also related to the verification of information. According to Kim (2016), the connectivity of information between online and offline sources has a positive effect on trustworthiness. Comparing information obtained online with information from friends, family and doctors was also important to achieve decision satisfaction for respondents in the Sillence, Briggs, Harris et al. (2007) survey. However, the doctor remained the primary source of information and advice. The criterion of *consistency with information from doctors/healthcare professionals* received the second-highest mean score (2.28) in our survey.

Also, in Jay M. Bernhardt and Elizabeth M. Felter's (2004) survey, some respondents reported that the more often and in different places information appears, the more credible it is. In contrast, respondents in the Metzger et al. (2003) survey reported that they only occasionally or rarely verified information in other sources. *Consistency with information found on other sites* ranked fifth among the criteria for assessing trustworthiness in our survey. According to Zdeněk Jonák (2004), verifying information in multiple sources is also very important, but determining whether the author cites the source accurately is also essential.

The author of the text and their qualification may be considered one of the most important criteria for assessing the trustworthiness of information (Jonák, 2004; Metzger, 2007) and it is also part of many tools for assessing the quality of information not only on websites. In the review created by Zhang et al. (2015), *the author and their qualification* is mentioned in 124 articles out of 165. In the survey by Macháčková and Smahel (2018), information about the author was the third most important criterion for assessing trustworthiness and was particularly important for respondents who were more active online. In our survey, the criterion *author is given* was on the penultimate position, shared with the criteria of *no grammatical or stylistic errors in the text* and *the information is consistent with my opinions*. One reason for this may be that it can be difficult to trace the author of a text (Eysenbach & Köhler, 2002, Pleskot & Rusová, 2018).

Discussing the fact that the author of the articles is often a doctor or a healthcare professional, it is necessary to address the issue of clarity (also readability and difficulty) of the text, which might be included as part of the criteria for easy search of information. A limitation for the user is too many technical terms, especially if they are not explained (Eysenbach & Köhler, 2002). Understanding texts on health and disease is closely linked to health literacy and a low level of literacy can cause the problems described above.

According to Eysenbach and Köhler (2002), respondents react positively to photographs of the authors or the site owners, especially if they have a pleasing appearance, which some sites take advantage of. This strategy is encountered on website A more in the form of videos, while on website B the photographs of experts are featured in the counselling chat rooms.

Providing contact details for the author/website owner is often quoted as a benefit in assessing the trustworthiness of the information/website, but it is also important to see if anyone responds to any submissions (Eysenbach & Köhler, 2002). Of the websites we evaluated, author contacts are only listed for website A. However, finding an author contact is one of the criteria that requires a certain amount of effort; these criteria are generally less applied (Hargittai et al., 2010; Metzger, 2007).

Respondents in our survey were asked about the criteria of *the author of the text is given* and *the author of the text is a doctor/healthcare professional*. However, the criteria for assessing the quality of information on a website

include, in addition to authorship, an assessment of who owns the website, who sponsors it, and what its purpose is (Zhang et al., 2015). In a survey conducted by Westerwick (2013), respondents focused not only on the ranking of the link, but also on who the site is sponsored by or who it belongs to. Often the owner of the site is also evident from the link in search results or from the domain if it is linked to an institution (Hong, 2006). According to Wonchan Choi (2013), the criterion of *the site owner being a respected organization* was among the top five criteria for evaluating the credibility of online health information resources, and according to Westerwick (2013), low credibility of the owner or sponsor cannot be balanced by an appealing design. This may have influenced our respondents in choosing which link to click on from the list of results offered, and then the authorship criterion may not play such a role.

But there is also the question of which institutions are respected and trusted. According to Kim (2016), this includes, for example, the government, but also doctors' websites and websites of universities, especially medical schools, but as Haider and Sundin (2020) aptly point out, this is something that changes across countries and communities, and it also changes over time. Among the sites that hosted the questionnaire, only one of them (website A) was sponsored by a medical professional society.

For some Internet users, information from public institutions and scientific publications is more trustworthy, and they look at whether it is an opinion of an individual or an institution, or whether the content has been selected on the basis of scientific criteria (Eysenbach & Köhler, 2002; Hargittai et al., 2010). However, other users prefer sites that convey personal experience of other users (e.g. various forums). The criteria used to assess the trustworthiness of information then vary. Criteria for evaluating posts in online forums are described, for example, by Kaitlin L. Costello (2014). Just such forums can also be found on one of the websites where the questionnaires were distributed, namely website B. It is the nature of these posts and the need to use different criteria to assess their credibility that may reflect the respondents' perspective on the criteria presented.

Grammatical and stylistic errors can also affect trustworthiness. Choi (2013) states that respondents ranked the presence of typographical errors as the most negative indicator of credibility, however, in our survey it was not given much weight and ended up in second to last place along with the criterion *the author of the text is given* and *the information is consistent to my opinions*.

According to Jonák (2004), the primary clue for recognizing unreliable information may be the discrepancy between experience and acquired knowledge. However, *consistency with respondents' own opinions* came second to last in this survey, along with the criteria of *no grammatical and stylistic errors in the text* and *the author of the text is given*. It was only important for the users who use only one criterion – then it was the second most frequent choice.

Overall, the most important criterion for our respondents was the *ease of search* for information on the site. Ease of use was stated as an important criterion by both Eysenbach and Köhler (2002) and Beldad et al. (2010). Also, Stephen A. Rains and Carolyn Donnerstein Karmikel (2009) found that information characteristics (author information and citations) did not affect respondents' trust, and that users were more likely to trust sites with high-quality structural features (navigation, response time, design) that allowed easy navigation and quick retrieval of needed information. According to Sillence, Briggs, Fishwick et al. (2007) and Sillence, Briggs, Harris et al. (2007), distrust and rejection of a site are based on design, whereas trust and selection of a site are based on the trustworthiness of the resource and personalization. It seems that structural characteristics that enable easy navigation also serve as heuristic cues for quickly assessing the trustworthiness of a page.

According to Kim (2016), ease of use is important for a website to be accepted as a resource and to remain being used. Websites that contain detailed and clear information on a large number of relevant topics are viewed positively (Beldad et al., 2010). It is greatly appreciated by some users if a topic is discussed from different perspectives, which allows the site to be considered neutral and the respondent can then identify with a perspective that is closer to their own (Choi, 2013).

Considering how our respondents viewed the different criteria and that the most important for them was the *ease of search for information*, it seems that they gravitate towards a heuristic assessment of information and its sources.

Limitations of the Study

An online survey has certain advantages, which certainly include the possibility of obtaining responses from a relatively large number of respondents in a relatively short time, but also disadvantages, which include mainly the fact that the willingness of Internet users to complete the survey decreases with increasing length, which significantly affected the form of the questionnaire. The limited length of the questionnaire for the online survey does not allow for asking very complex and contextual questions. According to authors of Survio.com, "an important element influencing the return rate of any questionnaire is the incentive to complete it - gifts, money, rewards, vouchers, etc" (Survio, 2013, Online questionnaires - advantages and disadvantages). Providing such motivation was beyond the capabilities of the survey team.

Another limitation is that the identity of the respondent is hidden and there is no control over who completes the questionnaire. It can only be trusted that the information on gender, age and education was truthfully provided by the respondents. Inconsistent answers to the question on age were flagged as an inadequate value in the data.

The discrepancy between what respondents say and what they do is documented in surveys already conducted (see above). The form of the survey did not allow for a combination of interviewing and observation, which would have led to greater objectivity in the findings.

Conclusion

This survey was conducted to find out how and why users of each website searched for health/disease information, how they feel about selected criteria for assessing the credibility of online information/resources, and what they are more likely to trust when they encounter a discrepancy between what they read online and the information they have from a doctor or healthcare professional.

The necessary information was obtained via an online questionnaire survey. In addition to the identification questions, respondents were asked how they accessed the site, why they searched for health or disease information, how they viewed the use of a selected ten criteria for assessing the credibility of online information/websites, and in the last question, the likely resolution of the discrepancy in information from healthcare professionals and the web. The questionnaires were placed on 4 websites, two of which (A and D) are on the MedLike list of trusted websites, and website A is under the auspices of a professional medical society. A total of 32,428 responses were obtained. The vast majority of respondents were female (79.5%) and most respondents were aged 30-49 years (mean age was 47 years).

The process the respondents use to search for information was surveyed because it is an essential and integral part of information evaluation. It was found that the fewest respondents searched for information on a site that someone recommended to them (2%), and the most respondents used an Internet search engine (66% of respondents).

Not only the way people search for information, but also the reason why they search for information can influence the way they view the various criteria used to assess the credibility of online information or websites, especially regarding possible consequences. The vast majority of our respondents sought information for their own health or the health of their next of kin, with only a minimum of respondents seeking information for their studies or because of their profession.

Respondents ranked the criterion *I can easily find what I need on the website* as the most important for evaluating the credibility of online information and websites, with an average score of 2.29 out of 5. The second most important criterion was *consistency with information from doctors or healthcare professionals* (2.28) and the third most important criterion was *the author of the text is a doctor or a healthcare professional* (2.14). In contrast, the least important criterion was *the date of publication or update* (1.53).

The order of importance of the criteria varied, for example, when considering the reason for seeking information. For respondents who searched because of their profession or for their studies, the criteria *the sources are cited* and *the text was reviewed by an expert* came to the fore, in addition to *consistency with information from a doctor or a healthcare professional*, compared to the aforementioned *ease of search* in the case of searching for information because of health and disease.

Nonetheless, the significance of all the criteria for assessing trustworthiness was relatively low from the respondents' point of view, not even reaching half of the points on the five-point scale available. Thus, the respondents in this survey seem to gravitate towards a heuristic evaluation of online information and resources, probably in an attempt to balance the effort and the time invested and the desired outcome, while valuing the information obtained and considering it more credible when it is consistent with information from a doctor or a healthcare professional.

Our study suggests that information and health literacy are areas that should receive greater and more comprehensive attention in the Czech Republic.

Acknowledgement

References

[1] Beldad, A., de Jond, M., & Steehouder, M. (2010). How shall I trust the faceless and the intangible? A literature review on the antecedents of online trust. *Computers in Human Behavior*, 26, 857-869. https://doi.org/10.1016/j.chb.2010.03.013

[2] Bernhardt, J. M., & Felter, E. M. (2004). Online pediatric information seeking among mothers of young children: results from a qualitative study using focus groups. *Journal of Medical Internet Research*, *6*(1), e7. https://doi.org/10.2196/jmir.6.1.e7

[3] Bliemel, M., & Hassanein, K. (2007). Consumer Satisfaction with Online Health Information Retrieval: A Model and Empirical Study. *e-Service Journal*, *5*, 53-83. https://doi.org/10.2979/ESJ.2007.5.2.53

[4] Brophy, J., & Bawden, D. (2005). Is Google enough? Comparison of an Internet search engine with academic library resources. *Aslib Proceedings*, *57*, 498-512. https://doi.org/10.1108/00012530510634235

[5] Czech Statistical Office. (2020, March 24). *Informační společnost v číslech – 2020* [Information society in numbers - 2020]. Czech Statistical Office. https://www.czso.cz/csu/czso/informacni-spolecnost-v-cislech-2020

[6] Costello, K. L. (2014). Proceedings of the American society for information science and technology. *Asis&t*, *51*(1), 1-4. https://doi.org/10.1002/meet.2014.14505101105

[7] Hargittai, E., Fullerton, L., Menchen-Trevino, E., & Thomas Yates K. (2010). Trust Online: Young Adults' Evaluation of Web Content. *International Journal of Communication*, *4*, 468-494. https://ijoc.org/index.php/ijoc/article/view/636

[8] Choi, W. (2013). *What Makes Online Health Information Credible for Older Adults? An Exploratory Study* [Conference paper]. CHI 2013 Changing Perspectives, Paris, France. https://www.

researchgate.net/publication/266653945_What_makes_online_health_information_credible_for_older_adults_an_exploratory_study

[9] Cole, J. I., Lebo, H., & Dunahee, M. (2017). *The World Internet Project – International report 7ᵗʰ edition*. USC Annenberg School Center for the Digital Future, University of Southern California. https://www.digitalcenter.org/wp-content/uploads/2017/12/2016-World-Internet-Project-Report.pdf

[10] Eysenbach, G., & Köhler, Ch. (2002). How do consumers search for and appraise health information on the world wide web? Qualitative study using focus groups, usability tests, and in-depth interviews. *The British Medical Journal*, *9*(324), 573-577. https://doi.org/10.1136/bmj.324.7337.573

[11] Eysenbach, G. (2007). Credibility of Health Information and Digital Media: New Perspectives and Implications for youth. In M. J. Metzger & A. J. Flanagin (Ed.). *The John D. and Cathrine T. MacArthur Foundation Series on Digital Media and Learning*. Cambridge, MA: The MIT Press (pp. 123-154). https://doi.org/10.1162/dmal.9780262562324.123

[12] Gigerenzer, G., & Gaissmaier, W. (2011). Heuristic Decision Making. *Annual Review of Psychology*, *62*(1), 451-482. https://doi.org/10.1146/annurev-psych-120709-145346

[13] Haider, J., & Sundin, O. (2020). Information literacy challenges in digital culture: conflicting engagements of trust and doubt. *Information, Communication and Society*, *25*(8), 1176-1191. https://doi.org/10.1080/1369118X.2020.1851389

[14] Hong, T. (2006). The influence of structural and message features on Web site credibility. *Journal of the American Society for Information Science and Technology*, *57*(1), 114-127. https://doi.org/10.1002/asi.20258

[15] Jonák, Z. (2004). *Jak rozpoznat věrohodnost, relevanci, spolehlivost informací a informačních pramenů* [How to recognize the credibility, relevance, reliability of information, and information sources]. Cyklus Uplatňování kritického myšlení. Metodický portál RVP.CZ. https://clanky.rvp.cz/clanek/o/z/120/JAK-ROZPOZNAT-VEROHODNOST-RELEVANCI-SPOLEHLIVOST-INFORMACI-A-INFORMACNICH-PRAMENU.html

[16] Kim, Y. (2016). Trust in health information websites: A systematic literature review on the antecedents of trust. *Health Informatics Journal*, *22*(2), 355-369. https://doi.org/10.1177/1460458214559432

[17] Kučera, Z., Pelikan, J., & Šteflová, A. (2016). Zdravotní gramotnost obyvatel ČR – výsledky komparativního reprezentativního šetření [Health literacy of the population of the Czech Republic - results of a comparative representative survey]. *Časopis lékařů českých*, *155*, 233-241. https://www.prolekare.cz/casopisy/casopis-lekaru-ceskych/2016-5/zdravotni-gramotnost-obyvatel-cr-vysledky-komparativniho-reprezentativniho-setreni-59024

[18] Lesenková, E. (2016). Podpora zdravotní gramotnosti a knihovny [Health literacy and library support]. *Lékařská knihovna*, *21*, 3-4. https://casopis.nlk.cz/archiv/2016-21-3-4/podpora-zdravotni-gramotnosti-a-knihovny/

[19] Liao, V. Q., & Fu, W. (2014). Age Differences in Credibility Judgment of Online Health Information. *ACM Transactions on Computer-Human Interaction*, *21*(1), 1-23. https://doi.org/10.1145/2534410.

[20] Macháčková, H., & Smahel, D. (2018). The perceived importance of credibility cues for the assessment of the trustworthiness of online information by visitors of health-related websites: The role of individual factors. *Telematics and Informatics*, *35*(5), 1534-1541. https://doi.org/10.1016/j.tele.2018.03.021

[21] Mager, A. (2009). Mediated health: sociotechnical practices of providing and using online health information. *New Media and Society*, *11*(7), 1123-1142. https://doi.org/10.1177/1461444809341700

[22] Materska, K. (2014). Information Heuristics of Information Literate People. In Kurbanoaeglu, S., Spiranec, S., Grassian, E., Mizrachi, D., & Catts, R. *Information Literacy. Lifelong Learning and Digital Citizenship in the 21ˢᵗ Century*. ECIL 2014 Croatia. Springer International Publishing. http://eprints.rclis.org/23919/1/Materska-eLIS.pdf

[23] Meric, F., Bernstam, E. V., Mirza, N. Q., Hunt, K. K., Ames, F. C., Ross, M. I., Kuerer, H. M., Pollock, R. E., Musen, M. A., & Singletary, E. S. (2002). Breast cancer on the world wide web: cross sectional survey of quality of information and popularity of websites. *The British Medical Journal*, *9*(324), 557-581. https://doi.org/10.1136/bmj.324.7337.577

[24] Metzger, M. J., Flanagin, A. J., & Zwarun, L. (2003). College student Web use, perceptions of information credibility, and verification behavior. *Computers and Education*, *41*(3), 271-290 https://doi.org/10.1016/S0360-1315(03)00049-6

[25] Metzger, M. J. (2007). Making sense of credibility on the Web: Models for evaluating online information and recommendations for future research. *Journal of the American Society for Information Science and Technology*, *58*(13), 2078-2091. https://doi.org/10.1002/asi.20672

[26] Národní Lékařská Knihovna. (n.d.). *Co je MedLike*? [What is MedLike?]. https://nlk.cz/zdroje/medlike/

[27] Pleskot, O., & Rusová, J. (2018). Internet – The threat or hope of Czech health literacy? *Kontakt*, 20(4), 458-465. https://doi.org/10.1016/j.kontakt.2018.10.001

[28] Rains, S. A., & Donnerstein Karmikel, C. (2009). Health information-seeking and perceptions of website credibility: Examining Web-use orientation, message characteristics, and structural features of websites. *Computers in Human Behavior*, *25*(2), 544-553. https://doi.org/.1016/j.chb.2008.11.005

[29] Rowlands, G., Shaw, A., Jaswal, S., Smith, S., & Harpham, T. (2017). Health literacy and the social determinants of health: A qualitatiove model from adult learners. *Health Promotion International*, *32*(1), 130-138. https://doi.org/10.1093/heapro/dav093

[30] Rusová, J., & Pleskot, O. (2020). Quality of health information on websites with the greatest potential to influence users in the Czech Republic. *Journal of Education Culture and Society*, *11*(1), 281-299. https://doi.org/10.15503/jecs2020.1.281.299

[31] Shah, A. A., Ravana, S. D., Hamid, S., & Ismail, M. A. (2015). Web credibility assessment: affecting factors and assessment techniques. *Information Research*, *20*(1). http://informationr.net/ir/20-1/paper663.html#.YgP7PurMJPY

[32] Scholz-Crane, A. (1998). Evaluating the Future: A Preliminary Study of the Process of How Undergraduate Students Evaluate Web Sources. *Reference Services Review*, *26*(3/4), 53-60. https://doi.org/10.1108/00907329810307759

[33] Sillence, E., Briggs, P., Fishwick, L., & Harris, P. (2006). A framework for understanding trust factors in web-based health advice. *International Journal of Human-Computer Studies*, *64*(8), 697-713. https://doi.org/10.1016/j.ijhcs.2006.02.007

[34] Sillence, E., Briggs, P., Fishwick, L., & Harris, P. (2007). Health Websites that people can trust – the case of hypertension. *Interacting with Computers*, *19*(1), 32-42. https://doi.org/.1016/j.intcom.2006.07.009

[35] Sillence, E., Briggs, P., Harris, P., & Fishwick, L. (2007). How do patients evaluate and make use of online health information? *Social Science & Medicine*. *64*(9)1853-62. https://doi.org/10.1016/j.socscimed.2007.01.012

[36] Survio. (2013). *Online dotazníky - výhody a nevýhody* [Online questionnaires - advantages and disadvantages]. Survio. https://www.survio.com/cs/blog/serialy/online-dotazniky-1-vyhody-a-nevyhody-2

[37] van Zyl, A., Turpin, M., Matthee, M. (2020). How Can Critical Thinking Be Used to Assess the Credibility of Online Information? In M. Hattingh, M. Matthee, H. Smuts, I. Pappas, Y. K. Dwivedi, M. Mäntymäki (Eds.), *Responsible Design, Implementation and Use of Information and Communication Technology*. I3E 2020. Lecture Notes in Computer Science (pp. 199-210), vol 12067. Springer, Cham.: https://doi.org/10.1007/978-3-030-45002-1_17

[38] Westerwick, A. (2013). Effects of Sponsorship, Web Site Design, and Google Ranking on the Credibility of Online Information. *Journal of Computer-Mediated Communication*, *18*, 194-211. https://doi.org/10.1111/jcc4.12006

[39] Zhang, Y., Sun, Y., & Xie, B. (2015). Quality of Health Information for Consumers on the Web: A Systematic Review of Indicators, Criteria, Tools, and Evaluation Results. *Journal of the Association for Information Science and Technology*, *66*(10), 2071-84. https://doi.org/10.1002/asi.23311