Evaluating Digital Health Information

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Digital technology places multiple health information sources at healthcare consumers' fingertips worldwide. However, accessing digital health information is only effective when the sources are user-friendly and credible. Finding crucial digital health information is convenient and helpful but can sometimes be problematic. There are many digital tools used for health information and various ways each can be evaluated to determine if it is a reliable source.

The electronic health evaluation checklist has been developed using reliable sources to provide you, the healthcare consumer, with a valuable checklist to evaluate digital tools across the digital health information continuum. The comprehensive electronic health information checklist tool will guide healthcare consumers in determining if digital tools are credible. Websites, mobile apps, and social media are three commonly used digital tools that healthcare consumers use to obtain health information that we will examine in greater detail.

Digital Tools

Websites

Healthcare websites are frequently visited for personal health information, but this can often lead to the retrieval of inaccurate information. The purpose of the Medical Library Association (MLA) is to promote quality information to improve health after they were the first to realize that not all health information websites are credible, suitably updated, or safe (Medical Library Association, 2022). According to MLA (2022), the web address itself can be a clue about the intent of the website sponsor. Government agencies will have a .gov in the website address, educational institutions will have a .edu, and professional organizations with a .org in the address. Commercial sites will have a .com in the address, which could represent a

specific company or could be sponsored by that company for commercial purposes (Medical Library Association, 2022).

As a result of the high instance of misinformation on healthcare websites, the MLA has created guidelines to help healthcare consumers learn to evaluate websites. These guidelines are incorporated into the electronic health information checklist in table 1.

Mobile Device Healthcare Applications

Mobile device applications (apps) created by reputable healthcare organizations may improve access to credible and portable healthcare information. Healthcare consumers use medical apps to manage their health and wellness with accessories and software (U.S. Food & Drug Administration, 2022a). On the other hand, healthcare providers often utilize apps for guidance in diagnosing and treating conditions that affect healthcare consumers (U.S. Food & Drug Administration, 2022a). Therefore, developing and managing reputable mobile technology apps is a priority, as they could be in the hands of the 90% of adults in America who subscribe to mobile services (Centers for Disease Control and Prevention, 2011).

The U.S. Food & Drug Administration (FDA) encourages developers to improve healthcare by providing apps for healthcare consumers and professionals. The FDA has the responsibility to oversee the safety and effectiveness of medical devices and mobile medical apps (U.S. Food & Drug Administration, 2022b). Software developers are encouraged to contact the FDA as early as possible during app development to determine the risk level and if an application is required for the app or device (U.S. Food & Drug Administration, 2022a). The electronic health evaluation checklist in table 1 can be utilized when evaluating apps for reliability but may require a different approach. For example, before downloading an app, take

the time to look at the information available about the developer, their privacy policies, and any potential links to entire websites. The app's information page should include when the app was released and last updated. If you are unsure of the app's credibility, do not download it.

Social Media

Social media has undoubtedly changed how people interact, connect, share information, and obtain entertainment. Although social media was once more frequently used by young adults in the 18-29-year-old range, a significant increase in use has steadily occurred for adults over 30 (Pew Research, 2021). Since 2005, the number of adults over 30 who use social media has risen consistently from year to year, reaching 72% of American adults surveyed (Pew Research, 2021). As adults of all ages engage in various social media platforms daily, social media has become a primary avenue to obtain news, health information, and provide a digital space to communicate interactively with others.

For years, the CDC has recognized social media as an effective platform for disseminating credible health and safety information (Centers for Disease Control and Prevention, 2011). The Social Media Toolkit published by the CDC in 2011 aims to share lessons learned as early social media adopters and provide guidelines for healthcare social media strategies (Centers for Disease Control and Prevention, 2011). These guidelines include plans to develop governance and to determine which social media platform meets the healthcare communicators' objectives (Centers for Disease Control and Prevention, 2011). According to the CDC (2011), social media allows health communicators to use social networking to spread important messages and influence healthcare decision-making. Therefore, social media is recognized as a powerful influence for those seeking online sources of healthcare information

and advice from peers who may be in the same social networking circle as a result of seeking support from others who are experiencing the same illness.

Many social media sites can be evaluated with the electronic health information checklist in table 1, similar to other digital tool evaluations. However, some may require a slightly different approach due to the unique attributes of various social media platforms. Social media sites can potentially have information or posts that are biased and based on personal opinions instead of science-based facts. Because social media content is constantly being shared by people who are not healthcare subject matter experts, it is essential to develop a habit of asking clarifying questions from the electronic health information checklist so the credibility of the information found on social media can be reviewed if the information is not readily available.

Although social media is an excellent place to use the electronic health evaluation checklist, users will still need to remain aware of red flags that could be specific to certain social media sites. For example, forums, chat rooms, and internet bulletin boards may not have appropriate guidelines to ensure information shared is credible (University of California San Francisco, 2022). Conversely, many reputable social media sites will be managed and moderated by the team assigned to manage the page for the healthcare organization. They may have a set of community standards for posts and comments to reduce the risk of that page being a source of misinformation. As a social media user and healthcare consumer, you must promote credible healthcare information on social media. If you are unsure if the healthcare information is trustworthy, it should not be shared with others.

Criteria and Categories for Evaluation

The criteria for evaluating and assessing health information as defined by the Health Summit Working Group in 1998 after they identified the potential impact that misinformation could have on the millions of healthcare consumers accessing digital health information tools on the internet (National Institutes of Health, 2001). The criteria include credibility, content, disclosure, links, design, and interactivity. (National Institutes of Health, 2001). This information was created to provide valuable guidelines to healthcare consumers and has been used in developing the electronic health evaluation criteria checklist in table 1.

Source

Confirming source credibility is central to evaluating the quality of digital health tools and requires multiple areas of consideration. Credibility involves the evaluation of the source, currency relevance, the review process of the information, and potential financial disclosures (National Institutes of Health 2019). In the electronic health evaluation checklist created in table 1, healthcare consumers will answer several specific questions to determine source credibility.

Currency

Confirming the date that the original information is based should be available, and the date it was posted on the web should also be displayed. According to Dalhousie Libraries (2019), this is referred to as currency. According to Dalhousie Libraries (2019), this is referred to as currency. Currency is addressed in the electronic health evaluation criteria checklist table in table 1.

Relevance

Reviewing the health information tool is required to ensure the site corresponds to what it claims to offer (Dalhousie Libraries, 2021). Relevance can be addressed by using the electronic health criteria checklist question to determine if the site may be attempting to sell a product or service while claiming to offer something else, such as health benefits or unrealistic expected results from a product or service they are attempting to offer. Relevance involves looking for clues to determine if the information is relevant to what it claims to offer.

Review Process

Evaluating the review process on the electronic health criteria checklist is accomplished by determining if the site is endorsed by a group that is commonly accepted as a credible resource. Healthcare consumers can evaluate digital tools to determine if the information provided has been reviewed and should also be able to describe the process involved with the review (Dalhousie Libraries, 2021).

Content

Evaluating content criteria involves the healthcare consumer ensuring that information on the digital tool, such as a website, mobile application, or social media site, is accurate and complete with appropriate disclaimer provided (Dalhousie Libraries, 2021).

Accuracy

Conclusions presented on the site should be supported by identifiable data and described so a layperson can understand the study framework (Dalhousie Libraries, 2021). Accuracy is evaluated on the electronic health criteria checklist for review by the healthcare consumer.

Disclaimer

A healthcare information site should include an appropriate disclaimer to ensure that the information on the site does not constitute medical advice, should not be used to make healthcare decisions, and does not replace the recommendations of healthcare professionals (Dalhousie Libraries, 2021). Additionally, all sources of information should be disclosed, and the healthcare information tool should also inform the healthcare consumer about the information's limitations, scope, and authority (Dalhousie Libraries, 2021).

Completeness

Ensuring the completeness of an electronic health information tool is essential because it shows a balanced perspective. If the information is not complete or only presents one side of the information, this should be noted (Dalhousie Library, 2021). The electronic health evaluation criteria checklist includes questions that will help the healthcare consumer evaluate the digital tool for completeness.

Disclosure

Electronic health information tools should inform healthcare consumers about any data collected during the use of the electronic health tool to help ensure the reliability of the particular site (Dalhousie Libraries, 2021). Additionally, healthcare consumers should know how the data collected will be used. Some disclosures may reveal more information about the intention of the digital tool and provider the healthcare consumer with more information to make an informed decision on the credibility of the electronic health tool. When using the electronic health evaluation criteria checklist, healthcare consumers can evaluate the digital tool they select for disclosures.

Links

Reputable sites include links to other reliable sources to verify that the site provides reliable information (Dalhousie Libraries, 2021). Healthcare consumers should be able to access links on sites that lead them to more information on a particular topic. Links to primary information sources further prove the credibility of the health information site or tool being used. The electronic health criteria checklist tool includes checking for external links and credible information.

Interactivity and Design

Interactivity and design may not affect the quality of the electronic health information tool content. However, usability and the tool's logical organization can impact the consumer's ability to understand and access available information (Dalhousie Libraries, 2021). If a reputable site is poorly designed, difficult to navigate, and at a reading level that is inappropriate, healthcare consumers may leave the site and choose a more user-friendly and possibly less reputable source. Developers of electronic health tools, standardized reading tests such as the Flesch Kincaid Reading Ease or Flesch Kincaid Grade Level test to ensure their content is at an appropriate reading level to be understood by the average American that reads at a 7^{th} to 9^{th}-grade reading level (WebFX, 2022). The electronic health criteria checklist in table 1 has questions that evaluate the understandability, interactivity, and design of the digital health information source, which helps ensure that reputable sites can reach the target audience by presenting information in a way that is easy to find, user friendly, and at an appropriate reading level.

Checklist Instructions

Healthcare consumers can utilize the checklist criteria to evaluate each source by assigning a number that corresponds to their findings with the following ratings: Does not apply (x), strongly disagree (1), disagree (2), undecided or unknown (3), agree (4), and strongly agree (5). The totals from each column will then be compared to one another to determine what end of the reliability spectrum the health information source is on. A lower score may indicate lower reliability, and on the other hand, a higher score may indicate higher reliability. There is no specific score that indicates a source's reliability, but rather, a guideline as to which source may be more or less reliable. Users of the tool may be able to look where the source is deficient in meeting the criteria and find another source that may be more reliable. However, the ultimate source to determine credibility and reliability should be to defer to trusted healthcare professionals' recommendations.

Other checklist tools may still be helpful to healthcare consumers, such as the MedlinePlus Checklist for Evaluating Internet Health Information (MedlinePlus,2022b). Although the MedlinePlus checklist is visually pleasing with graphics and simple checkboxes, the healthcare consumer cannot check one of the elements of the checklist without checking all of the items in the section. The electronic health evaluation criteria found in table 1 have been expanded to allow the healthcare consumer to navigate through the checklist and answer each question one by one rather than check a group of questions off simultaneously, as the MedlinePlus checklist requires

Conclusion

As technology continues to advance and there is a greater reliance on digital healthcare information and tools, the importance of credible and reputable sources of information is essential. Evaluating electronic health information for the criteria discussed and presented in the electronic health information criteria checklist is essential. However, it is not the final deciding factor on whether or not a site is reputable. Healthcare consumers should establish a line of communication with their providers regarding digital information and tools. In partnership with healthcare professionals, healthcare consumers can take more control of their health and the knowledge they gain about their health by only using credible and reliable digital health sources. A healthcare consumer should remain curious but vigilant in a world of rapid technological advances.

Table 1
E-Health Evaluation Criteria Checklist

E-Health Evaluation Criteria Checklist (Page 1 of 3)	**Does Not Apply (x)**	**Strongly Disagree (1)**	**Disagree (2)**	**Undecided, Neutral, or Unknown (3)**	**Agree (4)**	**Strongly Agree (5)**
There is an easily identifiable source or author.						
The qualifications of the source or author are clearly displayed on the e-health site or tool.						
Contact information for the author is available on the e-health site or tool in the form of address, email, or phone number.						
The e-health site or tool clearly displays the name and logo of the institution and/or organization responsible for the content.						
The site does not advertise a product or service.						
There is no evidence of personal or financial connections that may present a possible or perceived source of bias.						
The date of the original information is based and the date of posting of the website is displayed on the e-health site or tool.						
The information on the site is reviewed by an individual or group who is commonly accepted as a credible resource.						
The e-health site or tool is sponsored by at least one of the following: • Government agency with.gov in the address • Educational institution with .edu in the address • Professional organization with .org in the address						

Page 1 Total	Leave blank					
E-Health Evaluation Criteria Checklist (Page 2 of 3)	**Does Not Apply (0)**	**Strongly Disagree (1)**	**Disagree (2)**	**Undecided, Neutral, or Unknown (3)**	**Agree (4)**	**Strongly Agree (5)**
The e-health site or tool clearly states whether the information provided is intended for the general public or health professional or has separate sections of the site for each.						
The e-health site or tool has a disclaimer that emphasizes that the information is not intended to replace the advice of a health care professional or that one should consult with a healthcare professional before making health care decisions.						
The e-health site or tool clearly states the purpose of the site.						
The e-health site identifies data and shares information that appears complete and supports the conclusions presented as well as clearly stating clinical evidence so the layperson can understand.						
The e-health site or tool informs users of any information collected, who is collecting the data, and who owns the data if information is collected during use.						
The e-health site or tool uses language and terminology appropriate for the target audience. It is written in a way that reflects the reading level of the user.						
The e-health site or tool is well-organized and easy to navigate.						
The e-health site or tool has search capability that is easy to find and use.						
External links are included in the e-health site or tool that guides users to other appropriate authoritative sources.						

E-Health Evaluation Criteria Checklist (Page 3 of 3)						
If the e-health site or tool has social media activities, is there an established structure, standards, and recommendations that govern the social media activities?						
Combined Total from Page 1-3	Leave blank					

About the Checklist

This checklist for evaluating and assessing health information has been developed based on the criteria defined by the Health Summit Working Group in 1998 after they identified the potential impact that misinformation could have on the millions of healthcare consumers accessing digital health information tools on the internet (National Institutes of Health, 2001).

This evaluation checklist should be adopted and used for informational purposes only, and should not be used to replace the advice of your doctor or healthcare professional. Scores obtained from this checklist are only a guideline to evaluate e-health sites and tools. This checklist is not exhaustive and other criteria may need to be considered before deciding whether or not the e-health site or tool is a credible source. This checklist can be used with any digital healthcare information tool. If any questions do not apply, select "does not apply" and the score will not be affected.

Specific scores do not indicate that a source is credible, however, **lower scores** are associated with **less** credibility and **less** reliability of the e-health site or tool being evaluated and **higher scores** are associated with **higher** credibility and **higher** reliability of the e-health site or tool being evaluated. There is not a specific score that confirms that a site is or is not credible, however, the scores can help guide the healthcare consumer in the right direction to make informed choices on sites used to obtain reliable information.

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