

Introduction

In early 2000, about half of all adults were using the internet and in 2021, 93% of American adults reported that they use the internet. ¹ In 2014, a national survey found that 72% of adult internet users had searched online for information about health related topics. ² This increases the need for accurate and accessible health information on the internet. In 2018, there were 143.5 million emergency department visits with another 89 million patient visits at urgent care. ^{3,4} Patients may consult the internet when making the choice to seek care at the emergency department or an urgent care. It is important they are able to have accurate information as to make an informed choice because clinically unnecessary emergency departments can be costly and overcrowd emergency department while a visit to urgent care can delay care if a higher level of care is needed.

The most common reasons for clinically unnecessary trip to the emergency room has been identified as uncertainty about symptoms causing anxiety and fear, need for immediate pain relief, “wait and see” approach decided cannot delay any more, and poor access to their general practitioner. ⁵ A commentary on census data found that vulnerable populations are more likely to depend on emergency rooms for preventable care with factors affecting this rate including low income, education, lack of health insurance, transportation, and internet access. People in households without internet access had twice as many preventable emergency care visits as those in households with internet access. ⁶

When patients are making the decision about where to seek care, they may also visit an urgent care and require transfer to a higher level of care for the severity of their illness. The reasons for this could be trying to get care more quickly or more recently, swayed to avoid the emergency room due to concern about COVID-19. A case report outlined the delayed care of an ST-segment elevated myocardial infarction (STEMI) due to the patient’s concern for visiting a hospital during the COVID-19 pandemic. ⁷ This delay of care could greatly impact a patient’s outcome and important patient education of what setting to seek care may reduce instances where transfer is needed and reduce the delay of care.

Aims and Objectives

The aim of this study is to understand what online information is available to patients regarding emergency center usage. The primary objective is to determine the readability and reliability of this information and if that different based on what source the information was published by or whether a publication date is posted.

Methods

The phrase ‘should I go to the ER?’ was used to search Google, Yahoo, and Bing separately in a private browser without location availability in January 2023. The first 10 website links were recorded excluding any sponsored ads. Websites that were duplicates or not in a written format were also excluded.

For each website, the category of publisher was recorded (government, healthcare, insurance or news outlet) as well as a publication date if available.

The quality of the website was assessed using the DISCERN instrument. This tool is designed as a set of quality criteria for consumer health information. To assess the readability of each website, three validated tools were used: the Flesch Reading Ease Score (FRE), the Flesch-Kincaid grade level (FKGL) and the Gunning fog index (GFI). Table 1 below outlines and summarizes these tests.

Each website was also surveyed using the WAVE web accessibility evaluation tool to identify potential accessibility errors for patients using disability accommodations such as screen reading technology.

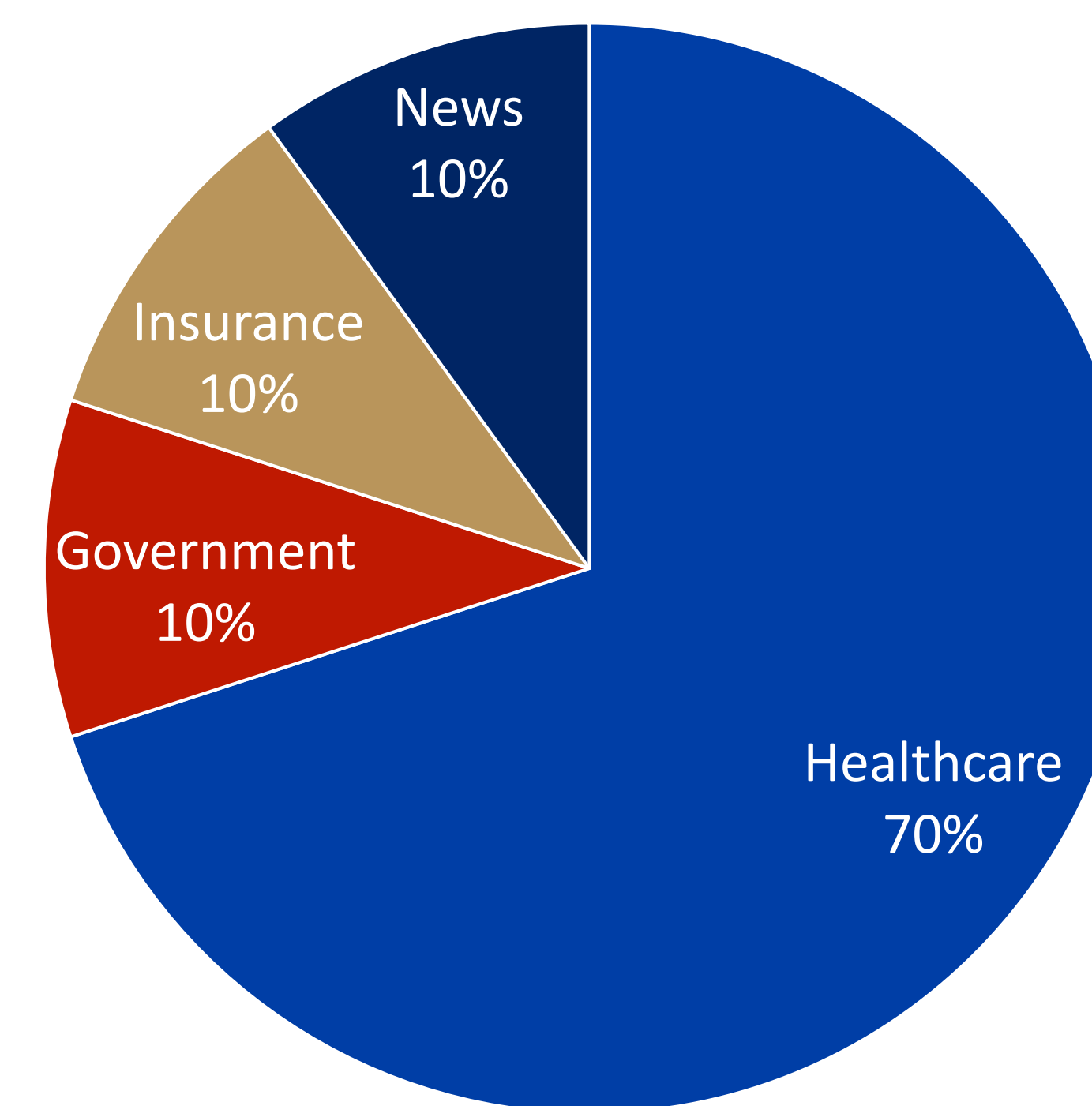
Table 1. Overview of the readability and reliability tests.

Test name	Formula	Result Range	Interpretation
Flesch Reading Ease (FRE)	$FRE = 206.835 - 1.015 \times (\text{words/sentences}) - 84.6 \times (\text{syllables/words})$	0-100	90-100: Very Easy 80-90: Easy 70-80: Fairly Easy 60-70: Standard 50-60: Fairly difficult 30-50: Difficult 0-30: Very Difficult
Flesch-Kincaid grade level (FKGL)	$FKGL = 0.39 \times (\text{words/sentences}) + 11.8 \times (\text{syllables/words}) - 15.59$	0-12	Minimum United States grade level of education required to comprehend the text on the first read
Gunning Fog Index (GFI)	$GFI = 0.4 \times [(\text{words/sentences}) + 100 \times (\text{complex words/words})]$	0-20	6: 6 th grade 7: 7 th grade 8: 8 th grade 9-12: High School 13-17: College 17+: Post-graduate
DISCERN tool	16-point criteria	16-80	63-80: Excellent 51-62: Good 39-50: Fair 27-38: Poor 16-26: Very Poor

Results

After screening each website, 10 were excluded (9 duplicate and 1 irrelevant), leaving a total of 20 websites to be included for analysis. Date of publication was posted on 14 (70%) of the search results. The category breakdown of the websites is shown below in Graph 1.

Graph 1. Source category of search results.



The median DISCERN score was 53 corresponding to ‘good’ quality. The quality of the website was not dependent on category or whether a publication date was displayed. The median FRE (59.8) corresponded to ‘fairly difficult’ to read. The median FKGL (8.2) and GFI (11.9) corresponded to 8th grade and high school reading levels respectively. The median number of web accessibility errors was 14. The highest quality information was from the National Institutes of Health. The most readable website was from University of Utah Health.

When comparing the group of websites that displayed a publication date to those that did not, there was no statistically significant difference in the quality or readability of the website (Table 2).

Table 2. Comparison of readability and reliability of websites displaying a publication date and those that did not.

Test name	Date displayed (n=14)	Not displayed (n=7)	P-value
Mean FRE (SD)	59.7 (12.9)	59.2 (6.3)	0.912
Mean FKGL (SD)	8.3 (2.3)	8.0 (0.7)	0.665
Mean GFI (SD)	11.7 (2.7)	12.3 (2.3)	0.646
Mean DISCERN (SD)	51 (7.6)	50 (14.1)	0.895
Mean WAVE score (SD)	20 (25.2)	29 (22.5)	0.458

*SD= Standard Deviation

Conclusions

The readability and reliability of online information for patients about emergency medical care usage is inadequate. The AMA recommends that patient materials be written at a 6th grade reading level. ⁸ The median reading levels were all above this recommendation and only one website was below this recommendation. The quality indicator correlated with ‘good’ quality but there is room for improvement to more complete and accurate information.

Limitations of this study include duplicate websites across the three search engines used creating a smaller sample size. Another limitation includes the three scales assessing readability but none include comprehension which also includes factors such as language barrier, culture and formal education. ⁹

Healthcare providers should guide patients to information that is readable and reliable. During regular visits, healthcare providers can preemptively educate patients about any conditions they have and what symptoms may warrant a trip to the emergency room or urgent care to alleviate some of the uncertainty for patients. The availability of telehealth and call in lines at primary care providers could also help patients in a shared decision making about what level of care will benefit them most.

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