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Introduction

- Gastroesophageal Reflux Disease (GERD) is a chronic gastrointestinal disorder and affects about 20% of the United States population.
- Accessible and comprehensive information is vital for patients to understand their condition.
- Many patients use the internet for self-education.
- Aim: to evaluate the comprehensiveness and readability of online patient education tools readily available.

Methods and Materials

- A cross-sectional analysis of online patient educational resources for GERD using Google in June 2022.
- We divided the US into four major regions and performed online searches based on socioeconomic status and population size:
 - Two wealthiest and poorest cities
 - Two largest and smallest cities in each region
- Purpose was to determine if variation existed in the availability of online resources.
- The top 10 Google websites, blogs and videos from each of the 16 cities were included and independently reviewed.
- An independently generated list of criteria with 36 items related to GERD that we believe should be included in patient information materials was used to screen the accuracy and comprehensiveness of patient resources and were recorded (Table 1).
- The readability of each website and blog was assessed using the Flesch-Kincaid readability test.

Table 1. Percentage of each cirrhosis criteria met by each category of websites, blogs and YouTube videos.

Criteria (n=36)	Website		Blogs (n=10)	Videos (n=10)
	Academic (n=6)	Other (n=4)		
Background				
Defines GERD	100%	100%	100%	100%
Explains disease pathophysiology	83%	75%	80%	80%
Clinical Manifestation				
Heartburn	100%	100%	100%	100%
Chest pain	100%	100%	70%	60%
Dysphagia	100%	100%	100%	70%
Regurgitation or sour taste	100%	100%	100%	90%
Cough	100%	100%	90%	70%
Sleep disturbances	50%	75%	30%	20%
Risk Factors				
Obesity	67%	100%	60%	70%
Hiatal hernia	67%	100%	50%	50%
Pregnancy	67%	100%	60%	40%
Diabetes or Gastroparesis	0%	50%	0%	30%
Autoimmune	17%	50%	0%	10%
Complications				
Esophageal stricture	83%	100%	60%	40%
Gastroesophageal ulcers or esophagitis	83%	100%	50%	30%
Barrett's Esophagus	83%	100%	90%	40%
Diagnosis				
Endoscopy	100%	100%	50%	40%
pH monitoring	100%	75%	40%	40%
Manometry	67%	75%	30%	20%
Barium swallow	83%	75%	30%	30%
Management				
Antacids	100%	100%	70%	80%
Proton pump inhibitors	100%	100%	90%	80%
Histamine 2 Receptor Antagonists	100%	100%	70%	70%
Surgery	83%	100%	80%	70%
Endoscopic interventions	33%	50%	20%	30%
Modifiable risks				
Weight loss	100%	100%	70%	60%
Smoking cessations	100%	100%	70%	60%
Avoid alcohol	100%	75%	100%	60%
Avoid coffee	100%	100%	70%	60%
Avoid medications that can worsen symptoms (i.e. aspirin, NSAID)	50%	100%	40%	50%
Avoid trigger foods	50%	100%	90%	50%
Lifestyle interventions				
Eat small meals	83%	100%	50%	40%
Eat food slowly/chew	100%	100%	70%	60%
Elevate head of the bed	0%	0%	30%	10%
Sleep on left side	100%	100%	80%	50%
Avoid laying flat after eating or eating 2-3 hours prior to bedtime	50%	100%	90%	50%

Table 2. Percentage of total GRED criteria and average grade level readability mentioned by each website, blog and video.

Type	Percentage of total GRED criteria mentioned by each website, blog and video			Average Grade Level Readability
	Minimum (%)	Median (%)	Maximum (%)	
Websites				
Academic (n=6)	61.1%	81.9%	91.7%	7.8
Other (n=4)	77.8%	91.7%	97.2%	8.0
Blogs (n=10)	41.7%	61.1%	86.1%	6.8
Videos (n=10)	13.9%	61.1%	88.9%	N/A

Figure 1. Map of United States where websites were searched.



Results

- No difference in websites, blogs or videos between the 16 cities.
- No website, blog or video met 100% of the criteria. Median percentage of total GERD criteria mentioned was 82% for academic websites, 92% for other websites, 61% for blogs and 61% for videos (Table 1 and 2).

Conclusions

- The websites, blogs and videos are consistent and accessible regardless of search location.
- These resources varied dramatically in their comprehensiveness. It is important for clinicians to be familiar with these patient resources.
- Patient blogs were more geared towards lifestyle modifications and included many misconceptions about adverse effects.
- Clinicians should provide vetted online and paper patient education materials to ensure accessibility and comprehensiveness.