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ORIGINAL ARTICLE

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YouTube as a source of information on *Helicobacter pylori*: Content and quality analysis

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Abstract

Background: *Helicobacter pylori* infection is the most common cause of infectious diseases worldwide, and management is a current and vital problem for physicians and patients. One of the online platforms that people use most to access health information is YouTube. Therefore, this study aimed to evaluate the quality and reliability of *H. pylori* information videos on YouTube.

Materials and Methods: The "*Helicobacter pylori*" keyword was searched with default filters on YouTube. Two hundred videos were evaluated. The source of videos was categorized as academic institutions, professional organizations, physicians, healthcare professionals other than physicians, health information websites, and independent users. The target audience of the videos was classified as patients and healthcare professionals. The Global Quality Scale (GQS), JAMA, and modified DISCERN video scores were obtained by taking the average of the scores given by the two authors.

Results: Seventy-four videos were analyzed, and the median duration was 9.25 (range: 1.14–121) min. The target audience of 43 (58.1%) videos was healthcare professionals, and 31 (41.9%) videos were for patients. There was no correlation between likes, dislikes, views, and the quality-usefulness of the videos. Video characteristics such as duration, likes, number of views, and time since video upload day were not associated with the source. The JAMA and DISCERN scores were significantly higher in academic institutions than in other sources. Health information websites had a significantly higher GQS score than other video sources ($p = .01$). In comparison, there was no significant difference between the target audience (patients and healthcare professionals) in terms of JAMA, modified DISCERN, and GQS scores.

Conclusions: YouTube has numerous videos for healthcare information nowadays. Although the quality and reliability of YouTube videos on *H. pylori* are average according to common scoring systems, we recommend videos produced by academic institutions and health information websites to inform patients.

KEYWORDS
healthcare, *Helicobacter pylori*, online learning, social media, YouTube

1 | INTRODUCTION

Helicobacter pylori infection is the most common cause of infectious diseases worldwide, which has been the subject of research for the last four decades. The prevalence of *H. pylori* infection varies from 10% to 90% by region. It can cause gastric diseases such as dyspepsia, peptic ulcer, malignancy, and extra-gastroduodenal conditions (e.g., iron deficiency anemia, idiopathic thrombocytopenic purpura, and vitamin B12 deficiency). *H. pylori* eradication is recommended for the prevention of gastric cancer. Due to its prevalence and severity, its diagnosis and treatment are current and vital problems for physicians and patients.[1–5]

Nowadays, more and more people access health information from online platforms. One of the most popular Internet media used by patients is YouTube. Patients increasingly benefit from the videos they watch here to manage their diseases. With COVID-19, it has been revealed that the effect of social media on patients is more important than past.[6–9]

There are several disadvantages to using YouTube to obtain health and medical information. There are no guidelines that control and regulate the medical content of uploaded videos. Issues such as misdirection, incomplete or incorrect information, complex medical language, and lack of peer review affect the benefit of videos to users. Therefore, evaluating the content, accuracy, and quality of the information is essential.[6–8,10,11]

To our knowledge, no studies examine information about *H. pylori* videos on YouTube. Therefore, this study aimed to evaluate the quality and reliability of *H. pylori* information videos on YouTube.

2 | MATERIALS AND METHODS

2.1 | Search

The "*Helicobacter pylori*" keyword was typed into the YouTube (https://www.youtube.com, Language: English) search bar, and the search was done using default filters in August 2022. The first 200 videos ranked by the YouTube algorithm were evaluated. After the exclusion criteria were applied, the remaining videos were watched by two general surgeons (two authors of this article) and scored with the specified scoring systems.

2.2 | Video characteristics

Videos that met the listed criteria were excluded: non-English videos, duplicate videos, blocked videos, hospital or medical device advertisement videos, only personal illness experience videos, irrelevant videos, and videos without audio or information.

The following video characteristics were recorded and analyzed: the channel name, video sources, target audience, video duration, number of views, number of likes, and time since video upload day.

2.3 | Video sources

The source of videos was categorized as academic institutions, professional organizations, physicians, healthcare professionals other than physicians (e.g., biologists, pharmacists, medical students), health information websites, and independent users. The target audience of videos was classified as patients and healthcare professionals according to the source description, which was given in the channel's "About" section and video content.[12,13]

2.4 | Video reliability and content quality

Three standard scales most commonly used in content evaluation were used to evaluate the videos.[12] For video reliability, 4-criterion Journal of American Medical Association (JAMA) benchmarks criteria were used (described in Table 1).[11,12,14] The Global Quality Scale (GQS) was used to evaluate the educational content quality of the videos (Table 1).[6,12–17] We used the modified DISCERN score to analyze the reliability and quality of the videos (Table 1).[12,13,15,17,18]

The summary description of the scores is as follows: the GQS ranges from 1 (poor quality) to 5 (excellent flow and quality). The JAMA score awards 1 point for each of the following elements: authorship, attribution, currency, and disclosures. The modified DISCERN score consists of five questions that can be answered yes (1 point) or no (0 points). Higher scores indicate more reliability, as in earlier publications.

The GQS, JAMA, and modified DISCERN scores of the video were obtained by taking the average of the scores given by the two authors for each video.

2.5 | Ethics statement

Internet videos that are available to the general audience were examined for descriptive research. There were no human or animal participants in this study. No institutional review board or ethics committee approval was required for this study because no patient data or materials were utilized, and all videos were available for public use on the social media website YouTube.com.

2.6 | Statistical analysis

We performed statistical analysis using the Statistical Package for Social Sciences (Version 24 for Mac, IBM Corporation). Shapiro–Wilk tests were used to examine the mean distributions of quantitative data. Quantitative variables with normal distribution were compared using the independent *t* test. Two quantitative data groups that did not show normal distribution were compared using the Mann–Whitney *U* test. Kruskal–Wallis tests were used to compare more than two groups with non-normally distributed quantitative variables. The relationships between quantitative variables were analyzed using Spearman

TABLE 1 Standard scales used for evaluation of YouTube videos.

The Journal of the American Medical Association (JAMA) benchmarks criteria (1 point for each criterion with a total score of 4 points.)	Global Quality Scale (GQS) The score ranges from 1 (poor quality) to 5 (excellent flow and quality).	Modified DISCERN (1 point is given for every Yes and 0 points for No)
Authorship: Author and contributor credentials and their affiliations should be provided.	Poor quality, poor flow of the site, most information missing, not at all useful for patients. Score: 1	Is the video clear, concise, and understandable?
Attribution: Clearly lists all copyright information and states references and sources for content.	Generally poor quality and poor flow, some information listed but many important topics missing, of very limited use to patients. Score: 2	Are reliable sources of information used? (i.e., publication cited, speaker is specialist)
Currency: Initial date of posted content and subsequent updates to content should be provided.	Moderate quality, suboptimal flow, some important information is adequately discussed but others poorly discussed, somewhat useful for patients. Score: 3	Is the information presented balanced and unbiased?
Disclosure: Conflicts of interest, funding, sponsorship, advertising, support, and video ownership should be fully disclosed.	Good quality and generally good flow, most of the relevant information is listed, but some topics not covered, useful for patients. Score: 4	Are additional sources of information listed for patient reference?
	Excellent quality and excellent flow, very useful for patients. Score: 5	Are areas of uncertainty/controversy mentioned?

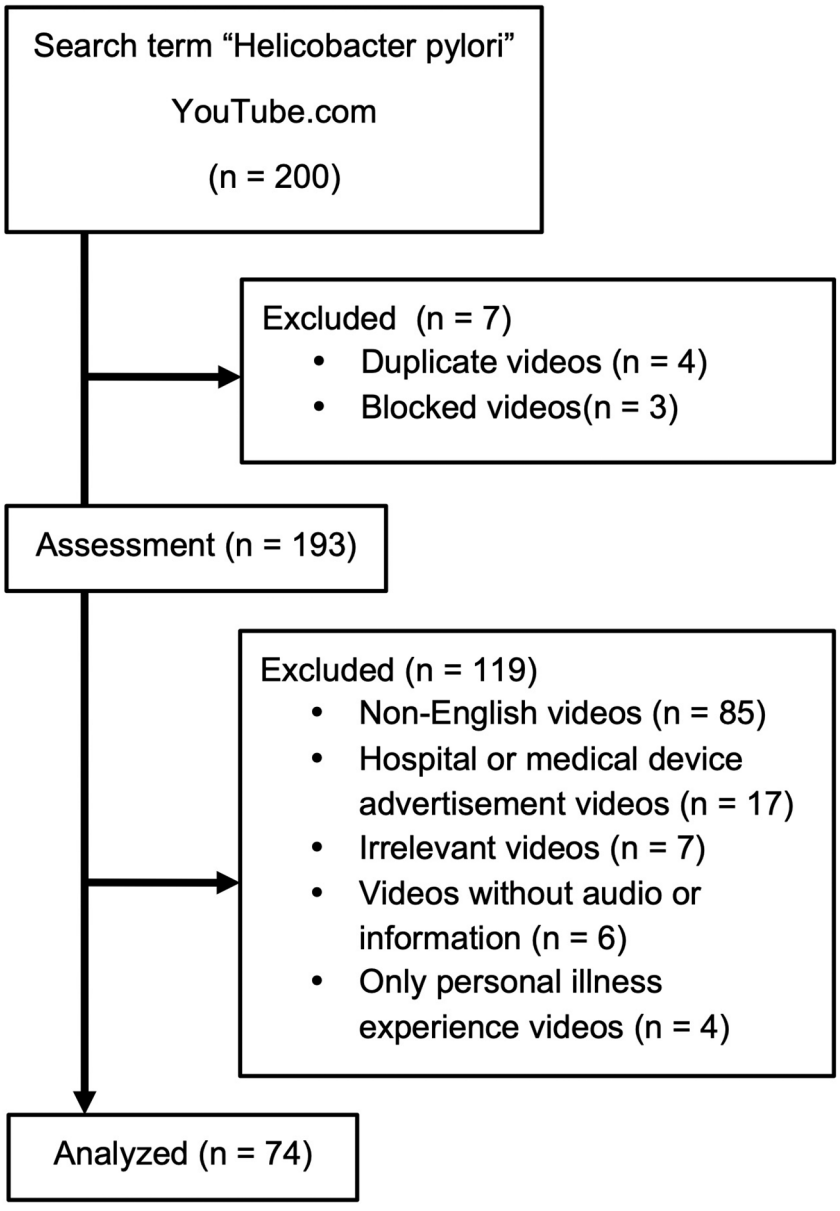


FIGURE 1 Flowchart of video selection.

correlation analysis. The confidence interval for statistical significance will be accepted as 95%, and a bilateral $p < .05$.

3 | RESULTS

A total of 74 videos were evaluated. A flowchart of video selection is given in Figure 1. The median duration was 9.25 (1.14–121) min. The target audience of 43 (58.1%) videos was classified as healthcare professionals, and 31 (41.9%) videos were for patients. Detailed characteristics of videos are given in Table 2.

Videos were compared according to the target audience, which was divided into patients and healthcare professionals. The videos for patients were significantly shorter (9.5 vs. 16.9 min, $p = .012$), but the number of likes was significantly higher (median 414 vs. 106, $p = .04$). The patient-targeted videos were significantly higher in the number of views. In terms of scoring, there was no significant difference between the two groups in terms of JAMA (2.5 vs. 2.6, $p = .9$), modified DISCERN (2.4 vs. 2.5, $p = .6$), and GQS (2.5 vs. 2.6, $p = .9$) scores, respectively.

The GQS, JAMA, and modified DISCERN scores were significantly correlated ($p < .001$). Video duration was not correlated with the like count, time since video upload day, and view count. The number of views count and like count were significantly positively correlated.

Video sources were also compared according to video features. Video characteristics such as duration, likes, number of views, and time since video upload day were not associated with the source. However, the JAMA score and DISCERN score were significantly higher in academic institutions compared to other sources (Table 3). Additionally, health information websites had a significantly higher GQS score than other video sources ($p = .01$) (Figure 2). Comparing binary groups with post hoc analysis showed that academic institutions' JAMA and DISCERN scores were significantly higher than "healthcare professionals other than physicians" and "independent users". GQS scores of health information websites were significantly higher than "healthcare professionals other than physicians".

4 | DISCUSSION

This is the first study to evaluate the information available on *H. pylori* on YouTube. Two professionals evaluated seventy-four videos, watched 5 million times by users. The answers to the following questions from the patient's point of view were sought in the videos: what is *H. pylori*, its causes and ways of transmission, who is at risk, its symptoms, how it is diagnosed, how it is treated, what are the complications, and what are the prevention methods?

In our study, the information contained in the videos was scored, and the video quality was detected as average. However, videos from academic institutions and healthcare information websites had higher reliability and quality. These results are compatible with many studies evaluating patient information videos on YouTube.[11,19–21] However, there is also research evaluating YouTube videos as a useful resource for patients.[6,9] A meta-analysis that included a total of 202 articles determined that YouTube is not a reliable source of medical and health information. It was proposed that YouTube should improve its ranking and recommendation system to promote higher-quality content related to health.[12]

Our study revealed that videos that targeted patients had significantly shorter duration but with a higher view and like counts when compared to the healthcare professional-targeted videos. These findings showed that YouTube algorithms manage to show the videos to the targeted audience. However, no difference was found in the scoring systems among videos for patients and healthcare workers. Considering that short videos are watched more, and the algorithm brings it to the users, this should be taken into consideration in the videos to be prepared by academic institutes and professionals.

We utilized the three most common scoring systems, which were positively correlated in our study. Many video sources were compared among these scoring systems and video features. Academic institutions and health information websites produced more reliable and high-quality videos than other sources (professional organizations, physicians, independent users, and healthcare professionals other than physicians). When video sources were compared, no

TABLE 2 Detailed characteristics of *Helicobacter pylori* videos.

Parameters	*N* = 74 *n* (%)
Video source	
Academic institutions	13 (17.6)
Professional organizations	10 (13.5)
Physicians	11 (14.9)
Healthcare professionals other than physicians	10 (13.5)
Health information websites	13 (17.6)
Independent users	17 (23.0)
Target audience	
Healthcare professionals	43 (58.1)
Patients	31 (41.9)
GQS score	
1	11 (14.9)
2	23 (31.1)
3	26 (35.1)
4	14 (18.9)
Duration (min, median) (min–max)	9.25 (1.14–121.10)
Likes (median) (min–max)	221 (1–20,000)
Views (median) (min–max)	28,589 (150–674,888)
Time since video upload day (median) (min–max)	1336 (85–4509)
JAMA score (median) (min–max)	2.5 (1–4)
DISCERN score (median) (min–max)	2.5 (1–4)

Abbreviations: JAMA, Journal of American Medical Association (JAMA) benchmarks criteria; GQS, Global Quality Scale.

TABLE 3 Comparison of video sources according to video features.

Video features	Academic institutions	Professional organizations	Physicians	Healthcare professionals other than physicians	Health information websites	Independent users	*p*-value
Duration (min)	11.5 (1.3–36.8)	5.6 (1.5–121)	11.3 (1.14–26)	6.4 (2.3–28)	9.2 (2.5–56.6)	9.3 (1.51–25.24)	.7
Likes	135 (1–1400)	519 (1–20,000)	77 (8–7900)	45 (1–4100)	355 (61–1700)	168 (17–3400)	.38
Views	25,914 (320–246,497)	80,365 (539–674,888)	2432 (157–423,920)	14,632 (150–362,530)	47,310 (2885–96,615)	20,271 (1006–166,188)	.33
Time since video upload day	2089 (335–3765)	1962 (347–4141)	1331 (173–2863)	869 (152–1395)	968 (246–4459)	1542 (85–4509)	.9
JAMA score (mean)	3.2 (0.6)	2.6 (0.6)	2.7 (0.6)	1.9 (0.6)	2.6 (0.6)	2.3 (0.5)	.001
DISCERN score (mean)	3.1 (0.7)	2.4 (0.6)	2.5 (0.8)	2.1 (0.5)	2.6 (0.4)	2 (0.4)	.001

Abbreviation: JAMA, Journal of American Medical Association (JAMA) benchmarks criteria.

FIGURE 2 Global Quality Scale scores according to video sources

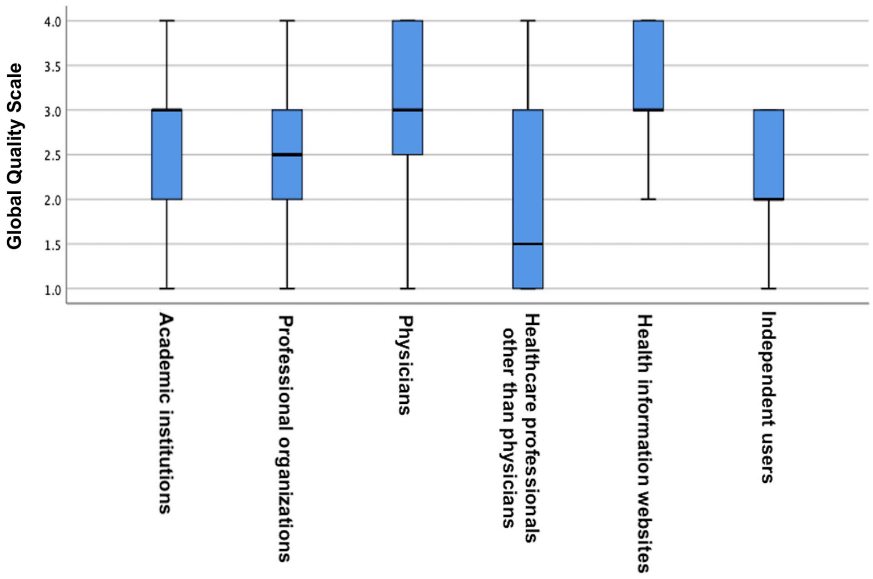
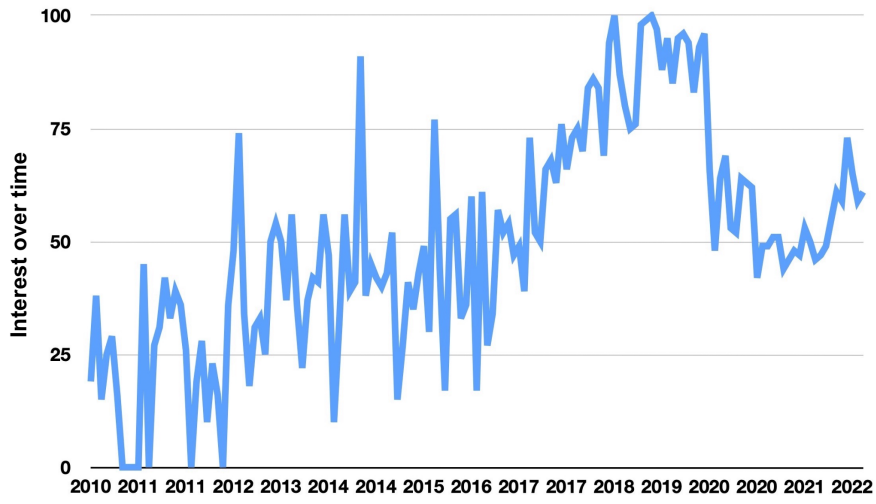


FIGURE 3 Interest in searching for *Helicobacter pylori* on YouTube. *Interest over time: Numbers represent search interest relative to the highest point on the chart.



difference was found in video duration, likes, time since video upload day, and the number of views. Although some studies have shown that long video duration is associated with a high DISCERN score, this correlation was not found in our research.[15,22] Similar to previous studies, there was no correlation between likes, dislikes, views, and the quality-usefulness of the videos.[6,11] Independent

user videos received fewer points than the more professional person or institution videos, and this finding was consistent with the literature.[13,20,23]

Google trends website showed that in the period between 2010, when the first video we evaluated was uploaded, and 2022, and analyzed the graph showing the search interest in *H. pylori* on YouTube; we detected that the search interest for *H. pylori* had increased gradually (Figure 3).[24] In daily practice, patients may be more likely to search social media and watch YouTube content when they come to the physician for *H. pylori*-positive endoscopic biopsy or test results or after an examination. Patients should be cautioned to use reliable sources when obtaining health information from the Internet and how to evaluate it.[7]

This study has several limitations. Our assessments may have been superficial as there is no validated tool yet to evaluate the data of these videos about a specific topic. Also, videos were searched according to YouTube's default settings. Search results are affected by many factors, such as relevance, interaction, and quality, and may differ from user to user.[25] Therefore, it may make it difficult for us to generalize the results of this cross-sectional study to all users.

5 | CONCLUSIONS

YouTube has numerous videos for healthcare information nowadays. Although the quality and reliability of YouTube videos on *H. pylori* are average according to common scoring systems, we recommend videos produced by academic institutions and health information websites to inform patients.

AUTHOR CONTRIBUTIONS

All listed authors meet the ICMJE criteria. We attest that all authors contributed significantly to the creation of this manuscript, each having fulfilled criteria as established by the ICMJE. We confirm that the manuscript has been read and approved by all named authors. Study conception and design: Muhammer Ergenç and Tevfik Kıvılcım Uprak. Acquisition of data: Muhammer Ergenç and Tevfik Kıvılcım Uprak. Analysis and interpretation of data: Muhammer Ergenç and Tevfik Kıvılcım Uprak. Drafting of manuscript: Muhammer Ergenç and Tevfik Kıvılcım Uprak. Critical revision of manuscript: Muhammer Ergenç and Tevfik Kıvılcım Uprak.

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DECLARATIONS

All authors contributed to the study's conception and design. Material preparation, data collection and analysis were performed by Muhammer Ergenç and Tevfik Kıvılcım Uprak. The first draft of the manuscript was written by Muhammer Ergenç and Tevfik Kıvılcım Uprak, and all authors commented on previous versions of the manuscript. All authors read and approved the final manuscript.

CONFLICT OF INTEREST STATEMENT

The authors have no relevant financial or nonfinancial interests to disclose.

CODE AVAILABILITY

Not applicable.

AUTHORSHIP

Conceptualization: Muhammer Ergenç and Tevfik Kıvılcım Uprak; Methodology: Muhammer Ergenç and Tevfik Kıvılcım Uprak; Formal analysis and investigation: Muhammer Ergenç and Tevfik Kıvılcım Uprak; Writing—original draft preparation: Muhammer Ergenç and Tevfik Kıvılcım Uprak; Writing—review and editing: Muhammer Ergenç and Tevfik Kıvılcım Uprak; Funding acquisition: Muhammer Ergenç and Tevfik Kıvılcım Uprak; Resources: Muhammer Ergenç and Tevfik Kıvılcım Uprak; Supervision: Muhammer Ergenç and Tevfik Kıvılcım Uprak.

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