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Can YouTube videos concerning the esophagogastroduodenoscopy experience be a reliable and satisfactory source of information for patient education in developing countries? A cross-sectional study from Turkey

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Ethics Committee Approval
The study was conducted without the approval of the ethics committee as it was performed by evaluating publicly available videos and it was done without human and/or animal participants.

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Abstract

Background/Aim: Social media has great potential for easy access to medical information especially in underdeveloped countries. We aimed to analyze the content, reliability and quality of the most viewed YouTube videos, targeting patients intending to use this social media platform as a source of information about the esophagogastroduodenoscopy (EGD) procedure.

Methods: Using the keywords “esophagogastroduodenoscopy” and “upper gastrointestinal endoscopy”, we assessed the publicly visible English-language videos available on YouTube. EGD Data Quality Score (EGD-DQS), Global Quality Score (GQS) and a modified DISCERN scale were used to assess the quality, flow and ease of use of the information and the reliability of the EGD videos.

Results: Universities/health-care professional group was the most common source of video upload (36%). The reliability score of the videos presented by physicians was significantly higher compared to all other lecturer groups (P=0.044). The reliability score, EGD-DQS and GQS score were also found to be statistically higher in the universities/health-care professional group compared to the health information websites, advertisement and patient groups (P<0.05, for all). Useful information was significantly higher in the universities/health-care professional group compared to the remaining upload sources (P<0.05). Lastly, patient-uploaded videos received more "likes" and "comments", and a higher number of subscribers.

Conclusions: YouTube is a powerful source of information for EGD procedure, especially where patients suffer to reach health care information due to inadvertent health policies. Academic sources should create videos that attract the interest of the viewers, and physicians should direct patients to online resources that present accurate and reliable information.

Keywords: Patient education, YouTube, Esophagogastroduodenoscopy, Upper gastrointestinal endoscopy, Social media, Medical information

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Introduction

The most effective method in the diagnosis and treatment of esophageal, gastric, and small-bowel diseases is performing an endoscopy targeting this system; namely, esophagogastroduodenoscopy (EGD) [1]. In 2013, an estimated 6 million EGD procedures were performed in the United States at an estimated cost of $ 12 billion [2]. When properly performed, this procedure is generally safe and well-tolerated for the examination of the upper gastrointestinal tract. However, in order to achieve a successful result in EGD procedure, not only the technical knowledge and skills of the healthcare professionals, but also the patients' knowledge and awareness of the procedure are required [3]. Although, explaining the details of this procedure is the responsibility of the physicians, patients who are planned to undergo EGD may not be able to ask healthcare professionals all questions related to the procedure under outpatient conditions, or new issues about the disease or procedure may arise after leaving the office and they may need to resort to the internet in search of further information, rather than contacting healthcare professionals. In underdeveloped and developing countries, such as Turkey, which are inadequate in the health sector and patient education, online resources have become the first and most influential source of health information for patients, and a large majority of the population uses the internet as the sole source of health information [4]. Therefore, it is important to evaluate whether the information obtained from videos on EGD is accurate and adequate or misleading since patients may turn to these sources with the hope of better understanding the disease and taking informed decisions.

YouTube, a social media platform created in 2005, is one of the most visited websites with over one billion users and provides easy access to all kinds of information, as well as health information [5]. In particular, patients with chronic diseases often rely on evidence based on the internet to manage their conditions. Individuals' health-related online searches should rely upon educative and instructive internet knowledge, since research surveys have revealed that 75% of such patients are affected by information acquired from online health searches in making decisions concerning the treatment of their condition [6]. However, the veracity and quality of the information available on this platform has been a concern since it offers uncontrollable access to both high- and low-quality information, with minimal guidelines and interventions regulating the content of the videos uploaded. Briefly, social media has great potential for easy access to medical information, but it is not always possible to ensure that this information is accurate and unbiased, and this situation can bring harm rather than benefit.

Although many previous studies on chronic diseases, self-educational skills and invasive procedures have evaluated the content and quality of information in YouTube videos [6-16], there is a lack of data evaluating the quality and content of educational videos on YouTube about EGD performance as a source of patient information. Therefore, we aimed to investigate the quality of content regarding YouTube EGD videos and determine whether this platform is a useful source for the education of patients especially whose sole information source is social media.

Materials and methods

Selection of videos

Between June 1 and 4, 2020, a You Tube search was performed on https://www.youtube.com/ using the terms "esophagogastroduodenoscopy" and "upper gastrointestinal endoscopy" to obtain all videos containing the relevant information. The search returned a total of 11.345 videos, which were then sorted by the maximum number of views to include only those that were most watched by individuals searching for both terms. In studies using online search engines, users are reported to be unlikely to go beyond the first few pages of any search result [8]. Therefore, in this study, only the first 200 videos were analyzed for both search terms (20 videos per page for the first 10 pages). The inclusion criteria were being in English language and being related to EGD. Videos which were not directly related to the EGD procedure, such as music videos, those belonging to gastric cancer awareness campaigns, and those with no sound were excluded. Duplications were excluded and videos with multiple parts were evaluated only once.

Data collection and grading of videos

Video parameters

Upon completing the search, detailed information about the videos, including the date of upload, number of days since upload, total number of views, likes, dislikes and comments, and duration were recorded.

Video sources and lecturer types

The source of videos was categorized as universities/physicians group, health information websites, advertisement, and patients. Lecturers were classified as physicians, healthcare professionals, patients, and external narrator.

Video sources and lecturer types

The videos were classified according to the target audience being healthcare professionals, or patients.

Assessment of the quality of the comprehensiveness

In order to evaluate the quality of the comprehensiveness of the EGD videos, a scoring system called the EGD Data Quality Score (EGD-DQS) was created based on an upper endoscopy education video from the website of the American Society of Gastrointestinal Endoscopy [17]. Scoring was carried out by giving +1 point for meeting the criterion in each item shown in Table 1, and 1 point was subtracted for each misleading information. The scoring method was inspired from and has been used in a similar study found in medical literature search on YouTube [13].

Assessment of the quality

A five-point validated scale, the Global Quality Score (GQS), which was developed as an evaluation tool for website resources, was also used to assess the flow and ease of use of the information presented online and the quality of the videos [18]. The videos were graded according to the criteria given in Table 2.

Assessment of reliability

To assess the reliability of the EGD videos, a five-point DISCERN tool modified by Singh et al. [19] from the original

scoring system was used (Table 2). One point was given for each "yes" response.

Table 1: EGD Data Quality Score Criteria (EGD-DQS)

Useful Information
1) Includes the definition of the EGD procedure (1 point); e.g., EGD is the process of viewing the section starting from the esophagus to the initial part of the stomach and small intestines by entering through the mouth with a thin and flexible imaging device with a camera with a light at the end.
2) Includes information that EGD is the best screening method to diagnose the gastric cancer (1 point).
3) Cites the prevalence of EGD (3,000 esophagogastroduodenoscopies are performed annually; prevalence: 3,000/250,000) (1 point).
4) Defines a gastroscope as a thin, bendable imaging device with a lighted camera on its end (1 point).
5) Gives the yearly estimation rate of gastric cancer (1 point).
6) Defines indications for EGD for diagnosis and treatment (1 point if it refers to general indications, including gastric cancer, esophageal cancer, polyp, web, diverticulum, gastritis, esophagitis, upper GIS bleeding, unexplained abdominal pain, and unexplained weight loss)
7) Includes information that EGD is the only method that allows both the diagnosis and excision of precancerous stomach lesions that are not yet detectable by a biopsy (1 point).
8) Includes information that eating or drinking should be stopped six hours before the procedure (1 point).
9) Informs the patient about how to continue the use of regular prescription drugs before the procedure (1 point).
10) States that informed consent will be obtained after explaining the benefits and risks (1 point).
11) Explains the general steps of the procedure (1 point).
12) Includes information that the procedure will be performed under intravenous sedation (1 point).
13) Encourages the patient to direct questions about the procedure to health-care professionals (1 point).
14) Includes information that the procedure takes approximately 30 minutes (1 point).
15) Lists the possible complications of the procedure (1 point if it refers to the frequency of complications, including gas, bloating, nausea, perforation, bleeding, and drug reaction).
16) Mentions that the duration of close follow-up after the procedure is approximately 30 minutes (1 point).
17) Describes what biopsy is and informs that it may take one week to obtain the results of the biopsy (1 point).
18) Includes information that the patient should not go to work or drive on the day of the procedure (1 point).
19) Mentions that the patient will need a companion on the day of the procedure (1 point).
20) Mentions that the patient can return to normal life the following day (1 point).
Misleading Information
1 point is deducted for each wrong information given below.
1) EGD is an unnecessary procedure.
2) EGD increases the risk of gastric cancer.
3) EGD does not prevent gastric cancer.
4) There is no supporting scientific evidence about EGD.
5) EGD should not be performed in asymptomatic patients.
6) EGD is a high-risk transaction.
7) EGD has a high mortality rate.
8) EGD is an expensive procedure.
9) EGD is very troublesome and is performed without sedation.
10) EGD is only performed for diagnostic purposes.

Table 2: Assessment tool for the Reliability and Global Quality Scores of EGD Videos on YouTube

Reliability Score Criteria
1. Can clear and concise information be obtained from the video and is the video understandable enough?
2. Are the sources on which the video is based (current studies or doctors) specified?
3. Is the information provided consistent and objective?
4. Are additional sources of information listed for patient reference?
5. Does the video report contradictory or ambiguous aspects?
Global Quality Score Criteria
1. Poor quality, it is unlikely to be of any benefit to patients.
2. Generally poor quality, some information is present whereas many important topics are missing, of minimal use to patients.
3. Moderate quality, some important information present, but other topics missing, somewhat useful for patients.
4. Good quality, most important information is adequately discussed, useful for patients.
5. Excellent quality, highly useful for patients.

One of the investigators is a general surgeon specialist (P.B.) certified with gastrointestinal endoscopy proficiency, and the other is an internal medicine specialist (D.A.) who has a special interest in endoscopic procedures. These two reviewers evaluated, classified and scored the videos independently and blindly. In case of a conflict between the two reviewers, a third internal medicine specialist (F.A.) evaluated the video and scored it. The study was conducted without the approval of the ethics committee as it was performed by evaluating publicly available videos and it was done without human and/or animal participants.

Statistical analysis

The data were collected and transferred to Microsoft Excel program. The Shapiro-Wilk test was used to evaluate the normality of data. Descriptive analyses were presented as median [minimum-maximum] and percentages (%) for continuous variables. Categorical variables are expressed as numbers and percentages. The Mann-Whitney U and Kruskal-Wallis tests were used for all variables that were not normally distributed in the analysis. The chi-square test was used for the analysis of categorical variables. A *P*-value of 0.05 or less was considered significant. Inter-rater agreement was determined using Cohen's kappa score. Data analyses were tested using IBM Statistical Package for the Social Sciences (SPSS) v. 26.0.

Results

We analyzed the videos returned by a search conducted on YouTube using the keywords "esophagogastroduodenoscopy" and "upper GI endoscopy". The first ten pages for the terms were evaluated, and a total of 200 videos were included in the study. After the elimination 105 videos due to the irrelevant or duplicated content, vocalization in a language other than English, or containing only animations without sound, 95 videos with a total of 17,135,764 views and a total duration of 908.58 minutes were found to be worthy for further analysis.

Among the videos enrolled in the study, the most common lecturer was physicians (40%) whereas universities/health-care professional group was the most common source of video upload (36%). Forty-six percent of the target audience consisted of patients, and the remaining 54% was health-care professionals (Table 3). When the videos were compared according to the type of lecturer, the reliability and misleading information scores were the two parameters showing a significant difference between the groups. The reliability score of the videos presented by physicians was significantly higher compared to those presented by other healthcare professionals, patients, and external narrators (P=0.044, P=0.001, and P<0.001, respectively). The misleading information scores were found to be significantly lower in the external narrator and physicians group compared to healthcare professionals and patients (P<0.05, for all) (Table 4). All the remaining parameters, including video length, time elapsed since upload, number of total views, likes, dislikes, comments, subscribers and daily views, GQS, EGD-DQS, and useful information showed no significant relationship between lecturer groups (Table 4).

Table 3: Frequency tables

Variables	n (%)
Lecturer Type	
Physicians	38 (40.00%)
Health professionals	13 (13.68%)
Individuals	22 (23.16%)
External narrators	22 (23.16%)
Upload Source	
Universities/physicians	34 (35.79%)
Health information websites	31 (32.63%)
Advertisements	19 (20.00%)
Patients	11 (11.58%)
Target Audience	
Patients	44 (46.32%)
Unclassified	51 (53.68%)
Total	95 (100.00%)

According to the results of the chi-square test, there was no significant relationship between the lecturer group and target audience whereas there was a statistically significant difference in terms of the upload source between the different lecturer

groups (P<0.001) (Table 4). The kappa statistic for inter-observer agreement was 0.87 (CI: 0.71-1.00).

Table 4: Significant differences according to the lecturer type variable (Kruskal-Wallis and chi-square tests)

	Lecturer type				
	Physicians	Healthcare professionals	Patients	External narrators	*P*-value
Length***	513.5 (368.25)	562 (371)	502.5 (319.25)	444 (411.5)	0.881
Total Views***	34445 (163179)	5634 (16046)	12211 (51417)	16099.5 (55141.5)	0.142
Duration***	43 (42.5)	17 (56)	48.5 (45)	34.5 (48.5)	0.581
Likes***	222.5 (1203.75)	54 (264.5)	258 (1198)	69 (402)	0.263
Dislikes***	16 (62.75)	1 (30.5)	11.5 (56.25)	7.5 (30.25)	0.345
Comments***	13 (81)	4 (17)	21 (52.25)	25 (77)	0.255
Subscribers***	6040 (12985.75)	1540 (11503.5)	11550 (17035)	3620 (11795)	0.157
Daily Views***	15.35 (48.09)	12.77 (15.63)	19.24 (54.59)	14.21 (36.31)	0.766
Reliability Score***	4 (1)	3 (1)	3 (1)	3 (1)	<0.001 *
EGD-DQS***	15.5 (5.25)	13 (3)	14 (3.25)	14 (3)	0.070
GQS***	4 (1)	3 (1)	3 (1)	4 (1)	0.096
Useful information***	16 (4)	16 (3)	14.5 (3.25)	15 (2.25)	0.089
Misleading information***	0 (1)	1 (0.5)	1 (1.25)	0 (1)	0.017*
Upload Source n (%)**					
Universities/physicians	22 (57.89%)	4 (30.77%)	1 (4.55%)	7 (31.82%)	<0.001 *
Health information websites	11 (28.95%)	5 (38.46%)	4 (18.18%)	11 (50%)	
Advertisements	5 (13.16%)	4 (30.77%)	6 (27.27%)	4 (18.18%)	
Patients	0 (0%)	0 (0%)	11 (50%)	0 (0%)	
Target Audience n (%)**					
Patients	19 (50%)	7 (53.85%)	9 (40.91%)	9 (40.91%)	0.769
Unclassified	19 (50%)	6 (46.15%)	13 (59.09%)	13 (59.09%)	

* Statistically significant at the 0.05 level, ** Chi-square test [n (%)], *** Kruskal-Wallis test [Median (interquartile range)]

The number of dislikes, reliability score, GQS, EGD-DQS, and useful information variables showed a statistically significant difference when compared according to the upload source. The number of dislikes significantly differed between the advertisement and universities/physicians group (P=0.006), as well as between the advertisement and health information websites groups (P=0.007). The number of dislikes in the advertisement group was statistically significantly lower compared to the other groups (P=0.027). The reliability score was also higher in the universities/physicians group compared to the health information websites, advertisement and patients (P=0.029, P=0.001 and P=0.006, respectively). The EGD-DQS scores were significantly higher in the universities/physicians group compared to health information websites, advertisement, and patients (P=0.026, P=0.002 and P=0.026, respectively). The GQS score was also statistically significantly higher in the universities/physicians group compared to the health information websites, advertisement, and patients (P=0.001, P<0.001 and P=0.001, respectively). Lastly, useful information was significantly higher in the universities/physicians group compared to the remaining upload sources (P=0.029 for health information websites, P=0.003 for advertisements, and P=0.005 for patients) (Table 5).

According to the results of the chi-square test, there was no statistically significant relationship between the upload source and target audience (P=0.559); however, a significant relationship was observed between the upload source and lecturer (P<0.001) (Table 5).

Table 5: Significant differences according to the upload source (Kruskal-Wallis and chi-square tests)

	Upload Source				
	Universities/ physicians	Health information websites	AD	Patients	*P*-value
Length***	563 (485.25)	555 (380)	451 (319)	454 (285)	0.483
Total Views***	23444 (360546)	21343 (63055)	5458 (44015)	12546 (61129)	0.197
Duration***	42 (47.75)	51 (48)	36 (43)	37 (48)	0.393
Likes***	200 (735)	221 (827)	45 (60)	438 (2177)	0.091
Dislikes***	14.5 (55.25)	12 (54)	1 (12)	12 (32)	0.027*
Comments***	14.5 (59.75)	32 (42)	5 (19)	33 (53)	0.190
Subscribers***	8020 (16599.25)	3700 (11862)	1760 (4774)	12100 (12530)	0.234
Daily Views***	15.24 (43.44)	16.32 (62.66)	5.05 (21.06)	30.92 (90.84)	0.122
Reliability Score***	4 (1)	3 (1)	3 (2)	3 (0)	0.003*
EGD-DQS***	16 (3.5)	14 (4)	13 (2)	14 (3)	0.008*
GQS***	4 (0)	3 (1)	3 (1)	3 (1)	<0.001*
Useful information***	16 (3)	15 (3)	14 (3)	14 (3)	0.004*
Misleading information***	0 (1)	1 (1)	1 (2)	0 (1)	0.531
Lecturer Type**					
Physicians	22 (64.71%)	11 (35.48%)	5 (26.32%)	0 (0%)	<0.001*
Health professionals	4 (11.76%)	5 (16.13%)	4 (21.05%)	0 (0%)	
Individuals	1 (2.94%)	4 (12.9%)	6 (31.58%)	11 (100%)	
External voice	7 (20.59%)	11 (35.48%)	4 (21.05%)	0 (0%)	
Target Audience**					
Patients	19 (55.88%)	13 (41.94%)	8 (42.11%)	4 (36.36%)	0.559
Unclassified	15 (44.12%)	18 (58.06%)	11 (57.89%)	7 (63.64%)	

AD: Advertisements, * Statistically significant at the 0.05 level, ** Chi-square test [n (%)], *** Kruskal-Wallis test [Median (interquartile range)]

Discussion

EGD is the most effective method in the diagnosis, treatment and screening of upper gastrointestinal system diseases [21]. Although EGD does not require much patient experience and knowledge during preparation and procedure, providing EGD candidates with necessary information before the procedure is very important in order to reduce their associated concerns [22]. The preparation stages, purpose, and problems that may arise in relation to the procedure should be shared with the patient. Although this is usually undertaken by physicians, most patients prefer to obtain further detailed information and access visual material on how the procedure is performed. Even information forms prepared for this purpose are sometimes insufficient, and therefore patients refer to social media and other online platforms as a source of information satisfaction [23, 24]. One of the sources used by patients to access information about EGD is YouTube. Although the contribution of an open-access platform to easy access to information is undeniable, there is also the inevitable catastrophic effect of an information provider lacking content and accuracy control. A study conducted to determine the level of health literacy of the adult population in Turkey found that 64.6% of our society is in the category of insufficient health literacy [25, 26]. Considering that individuals have different health literacy levels, it may be difficult for some to receive the same benefit from these videos. The low level of health literacy brings along concerns that patients may not be able to access accurate and high-quality information or understand what is presented even if they have such access.

In this study, we defined, analyzed and evaluated videos on EGD posted on YouTube. The total duration of the 95 videos evaluated was 908.58 minutes, and they had more than 17 million views. While evaluating the information quality of YouTube videos about EGD, we used a method similar to those employed in previous studies examining videos on various diseases and procedures [6-16]. As a result of the general analysis, we found that the videos had been mostly uploaded to YouTube by universities/physicians group (36%), and this group had the highest reliability, comprehensiveness, and quality. This led us to the conclusion that You Tube is a powerful source of information on EGD.

We concluded that the video source of upload was associated with reliability, comprehensiveness, and quality. The videos uploaded by universities/physicians were not only the most common video sources, but also had the highest EGD-DQS and GQS scores. These results are consistent with those of a previous study evaluating the colonoscopy videos which also had highest DQS, and GQS, whereas, in that study, the mean DQS of videos ⁿuploaded by professional healthcare organizations or physicians were found to be significantly lower than the upper limit [13]. This difference may be attributed to both the preparatory stage of colonoscopy and the procedure itself being more complicated than EGD. Accordingly, the total DQS was determined as 40 in the colonoscopy study since the narrators had more information to communicate to the audience. In the colonoscopy study, the second most common upload source group being patients or their relatives and the presence of videos posted by alternative medical providers may have decreased the DQS value obtained from all sources. In our study, videos in which patients shared their personal experiences ranked last as the upload source, and the sample did not contain any video uploaded by an alternative medical provider.

The most common video sources in our study were those provided by universities/physicians. However, given that these academic sources constituted one-third of the total views, we think that they are not sufficiently represented. In particular, we believe that editing videos describing interventional and stepwise processes by physicians or health care professionals will reduce misinformation In almost all of the YouTube studies, in which high reliability and accurate information were determined in the analysis of such stepwise processes, the narrator and video installer have been found as a physician or health care Professional [9, 16]. In another two studies in which videos about bowel preparation performed before colonoscopy were examined, similar results were demonstrated. In those studies, bowel preparation videos posted on YouTube by medical sources were reported to be high quality content videos [14, 15].

Description of step by step procedures, either face-to-face or on social media platforms, by different sources in health-care practices may be confusing for the targeted population. The knowledge about these stepwise procedures provided by either patients or health-care providers may cause difficulties in both understanding and keeping in mind the subsequent stages of a real-time application for individuals who have no idea or past experience about the subject [9, 12, 14, 16]. In the study assessing the YouTube videos about the information for colonoscopy bowel preparation, Basch et al. [14] reported that the accuracy of knowledge about sequencing of process steps had an indisputable positive impact on mindfulness-based learning of the target individuals. Correct and ordered information has a direct positive correlation with information retention; precisely for this reason the messages given by videos uploaded to internet platforms should contain information totally deprived of sequencing mistakes. In addition, videos containing sequencing and related logic errors may cause patients to worry about the planned procedure itself and lead individuals to take a biased attitude towards the procedure to be applied [16]. Specifically, a strict conformation while describing the steps that serve the purpose enables people to approach the subject comfortably and rationally by removing the question marks in their minds. In similar previous studies, it has been shown that the rates of reliability and useful information are undeniably high in properly designed videos with high DQS that healthcare professionals and physicians upload to social media platforms [8, 12, 16]. In the present study, we obtained similar results reaching higher reliability and EGD-DQS scores in gastroscopy videos uploaded by healthcare professionals and physicians describing the process more clearly and sequentially compared to other groups. Indeed, many healthcare professionals believe that at least websites should be evaluated for accuracy and argue that recommendations are needed for the creation of easy websites that patients can understand.

We consider that academic sources, which provide accurate and unbiased material and produce and upload informative and instructional videos to YouTube, should aim to not only inform but also attract viewers. When it comes to popularity, although statistically insignificant, the present study showed that the videos in which the patients talked about their experiences received more likes and comments, and they also had more subscribers. This finding is similar to the result of a study evaluating hypertension videos on YouTube [7]. We hypothesized that the reason for the low popularity of videos uploaded by academic sources may be the frequent use of medical terminology in academic videos, which does not attract the attention of the viewers and results in them losing interest after a while. Additionally, since video length is significantly associated with comprehensiveness, comprehensive videos not being watched from the beginning to the end may have led to this result. Therefore, we believe that a balance must be established between sophistication and viewer attention spans, and healthcare professionals need to ensure that the videos they post online are prepared in a simple language that is clear for everyone.

In our study, we found that the number of dislikes and that of comments for the videos uploaded for commercial purposes were very low compared to the other upload source groups. The durations of commercial videos were relatively shorter, and their EGD-DQS values were lower than the remaining groups. The lower number of dislikes for these videos may be because the viewers, who considered the content presented to be inadequate, chose to directly refer to other videos, without clicking on the dislike button or watching the videos to the end.

Limitations

There were some limitations to our study. First, only videos narrated in English language were evaluated. The lack of videos prepared in our own language can cause misunderstandings and unnecessary worries on patient populations who do not speak or know little foreign languages. In addition, since YouTube is a dynamic platform that is constantly changing with new videos being posted and their popularity shifting, the number of video views and search rankings may differ within days.

Conclusions

YouTube seems as a powerful source of information on EGD and we concluded that this social media platform is a reliable source for quality information about the EGD procedure.

However, although the most common video sources were professional health care providers, they may not be sufficiently represented on YouTube since these academic sources constituted only one-third of the total views. Although it seems technically difficult to audit all the information published by a constantly renewed source of information, it would be appropriate to at least periodically evaluate the most popular and most shared videos and remove scientifically inaccurate information. Especially in countries where patient education is insufficient, we believe that it will be an important step in terms of remote patient education for the relevant institutions to present patient educational videos to the patient by preparing them in corporate technique and their own language. Ideally, physicians should direct patients to online resources that provide accurate and reliable information in their native language, and the goal should be achieved by ensuring the involvement of patients in both the diagnosis and treatment stages.

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