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The accuracy of YouTube videos on idiopathic granulomatous mastitis: A analysis of quality and reliability

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Abstract

Most people get health information online, but its quality and reliability are unclear. To assess the quality and reliability of YouTube videos about idiopathic granulomatous mastitis (IGM). Two rheumatologists independently searched YouTube on January 4, 2025, using the keywords "idiopathic granulomatous mastitis" and "granulomatous mastitis." Video metrics were recorded. The Journal of the American Medical Association (JAMA), global quality scale (GQS), and modified DISCERN (mDISCERN), were employed to evaluate the reliability and quality of the videos. Videos were categorized into groups based on GQS and physician and non-physician groups based on source. Comparative analyses were performed. The study included 50 of 120 YouTube videos examined on IGM, excluding duplicate, irrelevant, non-English, and inappropriate audio videos. These included 72% useful, 10% misleading, and 18% patient experiences. Content categories included overview (66%), clinical findings (20%), pathogenesis (8%), and treatment (6%). Physicians uploaded 46% of videos, while non-physicians uploaded 54%. Physician videos had significantly higher mDISCERN, GQS and JAMA scores ($p<0.001$) and were more likely to cover pathogenesis ($p<0.05$). Non-physician videos were more often misleading ($p<0.05$). There were significant differences in the number of, daily views, views, video power index, likes, mDISCERN, and JAMA score for high-quality videos ($p<0.016$). The mDISCERN, JAMA, and GQS were highly correlated between researchers ($p<0.001$). GQS and JAMA are strongly positively correlated ($p<0.001$). Although the reliability of the content depends on the source, YouTube can be beneficial to IGM. Quality checks should be done before uploading due to misleading information.

Keywords: YouTube, idiopathic granulomatous mastitis, video quality, internet

Introduction

Idiopathic granulomatous mastitis (IGM) is a benign inflammatory condition of the breast that predominantly impacts women of reproductive age [1-3]. It was first described in 1972. Clinical presentation includes breast mass, pain, discharge, erythema, ulceration, and nipple retraction [4,5]. IGM usually affects only one breast. Bilateral involvement is less common. Peripheral breast tissue involvement is observed in about half of the cases and subareolar and diffuse involvement in the remainder [5]. Although IGM is sometimes presented as a rare disease in the literature, it is reported to account for 24% of inflammatory breast diseases and 1.8% of benign breast diseases [6,7]. The etiology of the disease remains unclear [8]. Breastfeeding, pregnancy, hyperprolactinemia, alpha1-

antitrypsin deficiency, trauma, oral contraceptive use, diabetes, smoking, and autoimmune diseases have been identified as triggering factors. The underlying mechanisms, however, remain unclear [5]. It can mimic other types of mastitis and malignancy, which can make the diagnostic process difficult [9]. Histopathological assessment is the definitive standard for diagnosis. Biopsy shows granulomatous formation with local infiltration of plasma cells, multinucleated giant cells, and epithelioid histiocytes [10]. Mammography, ultrasound, and magnetic resonance imaging can be used to exclude other breast pathologies at the diagnostic stage [11]. In diagnosing IGM, alternative causes of granulomatous inflammation must be initially examined and excluded in the differential diagnosis. The differential diagnosis includes inflammatory breast

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malignancies, infectious mastitis (especially tuberculosis), diabetic mastopathy, granulomatosis with polyangiitis, IgG4-related sclerosing mastitis, foreign body reaction, and sarcoidosis [5]. Although benign, IGM can be aggressive, progressive, and locally recurrent. Treatment options for IGM are varied, including watchful waiting, antibiotics, glucocorticoids (local or systemic, immunosuppressive drugs, and surgery. however there are no established guidelines. Immunosuppressive drugs such as methotrexate, mycophenolate mofetil, and azathioprine can help patients with IGM achieve remission and reduce relapse rates. TNF inhibitors may be useful for refractory IGM [1,2,4].

Social media and the internet are indispensable elements of our digital age. YouTube is popular for education because of its ease of use, accessibility, and social networking features. In recent years, it has emerged as a significant source of information, particularly in the domain of health. Nonetheless, there are apprehensions regarding the reliability and quality of online health information [12]. Previous research has evaluated the quality of information available on YouTube about rheumatic diseases such as familial Mediterranean fever (FMF), reactive arthritis (ReA), systemic lupus erythematosus (SLE), gout, rheumatoid arthritis (RA), psoriatic arthritis, ankylosing spondylitis, and Sjögren's syndrome [12-19]. The quality and reliability of IGM-related recordings on YouTube have not been evaluated in any research, as far as we are aware. This study sought to evaluate the reliability, quality, and substance of IGM-related health information available on YouTube.

Material and Methods

Design and Subjects

This research is an examination of descriptive YouTube videos that pertain to IGM. The videos were viewed from a new YouTube account after clearing the cache of the respective browsers to reduce the impact of personal preferences, browser history, and cookies. On January 4, 2025, The videos were located on YouTube (<http://www.youtube.com>) by employing the keywords "granulomatous mastitis" and "idiopathic granulomatous mastitis." Previous studies have shown that people most often view the first 3 pages on YouTube [12,20]. Previously, there were 3 pages with 60 videos, 20 on each page. However, the current search results are published on a single page. Therefore, this study evaluated the first 60 videos for each keyword. Screening and evaluation were performed blindly by 2 experienced rheumatologists (ÖK and MNK). In case of disagreement between the evaluators, the relevant videos were re-evaluated together. The final consensus scores were recorded. English-language videos were used for analysis due to their status as the most widely spoken language in the world [21]. Videos with duplicate videos, inappropriate audio, irrelevant videos, and non-English videos were excluded. This study did not involve animals or human participants. Therefore, ethical approval was not obtained as with other similar YouTube studies [15,22].

The total number of views, dislikes, likes, and comments was documented. Other characteristics of the videos, such as date of upload, duration, source, intended population, features, and content (clinical features, pathogenesis, overview, and treatment) were also noted. For a robust and accurate analysis, due to the variability in online time and movie upload dates, the daily view count was determined. The daily view rate was determined by dividing the number of views by the duration of accessibility (in days). Accessibility duration (days) was calculated by subtracting the date the video was scanned from the date it was uploaded [22]. The view rate was calculated using the formula [number of views/number of views per day]. The like rate was calculated using the formula [(likes × 100) / (likes + dislikes)]. The Video Power Index (VPI) was employed to assess the popularity of the videos. Its formula was [(Like Rate * View Rate) / 100 [15,22]. The Journal of the American Medical Association (JAMA) and Global Quality Scale (GQS) were used to assess video quality. JAMA consists of 4 domains, each worth 1 point. JAMA assessed criteria for determining citation, authorship, attribution, timeliness, and description [22]. The GQS comprises five questions. The cumulative score varies from 0 to 5. A higher score indicates superior video quality. The reliability of the video was evaluated utilizing the modified DISCERN tool (mDISCERN). mDISCERN consists of 5 questions, each with a score of 1. The higher the score, the more reliable the video [18,23]. When reviewing the literature on YouTube videos, JAMA, mDISCERN, and GQS were used for purposes similar to this study. The scoring items of the JAMA, GQS, and mDISCERN tools are shown in Table 1.

Table 1. Assessing reliability and quality

Global Quality Scale [18,22]	
1.	Low quality, poor flow, lack of information, unhelpful to patients
2.	Poor information, minimal patient benefit
3.	Moderate quality, relevant facts adequately discussed
4.	Good quality, covers most necessary information, good flow, helps patients
5.	Superb quality and coherence, beneficial to patients
Modified DISCERN reliability tool [18,22]	
1.	Is the video lucid, succinct, and comprehensible?
2.	Are credible sources referenced?
3.	Is the information presented fairly and impartially?
4.	Are additional patient reference sources listed?
5.	Does the video address controversial or ambiguous issues?
The Journal of the American Medical Association benchmark criteria [21]	
1.	Authorship: Provide the credentials and affiliations of authors and contributors
2.	Attribution: List all content references and copyright information
3.	Disclosure: The ownership of the website must be clearly and comprehensively stated, together with any advertising, sponsorship, commercial funding, underwriting or support, and possible conflicts of interest
4.	Currency: Upload and update dates should be provided

Outcomes

The primary outcome of this study is to figure out the quality and reliability of IGM-related YouTube videos. The secondary outcome is to ascertain the overall features of the videos, including the uploader, target audience, and subject matter.

Statistical Analysis

Statistical analyses were conducted using the Statistical Package for the Social Sciences (Windows, version 26) developed by IBM Corp. of Armonk, NY, USA. The normality of the variables was tested by analytical methods (Kolmogorov-Smirnov/ Shapiro-Wilk). The first comparative analysis was conducted between physician and non-physician groups according to the video upload source. When making comparisons, we used the independent t-test for continuously distributed variables and the Mann-Whitney U test for variables that did not follow a normal distribution. The Pearson chi-squared test or Fisher's exact test (when the assumptions of the chi-squared test were invalid) was employed to compare categorical variables across groups. Quantitative data are shown as median (interquartile range, or IQR), while categorical variables are shown as numerical values and percentages. Statistical significance was determined by a type 1 error value below 5%. The

videos were categorized into three quality groups based on the GQS score, and a second comparison was made between the video parameters. A one-way ANOVA test was employed for parametric variables in this comparison. Levene's test was employed to assess the homogeneity of variance. The Kruskal-Wallis test was used for non-parametric variables. The Mann-Whitney U test, designed for non-normally distributed data, was used for post hoc pairwise comparisons to determine whether there were significant differences between these three groups. In post hoc comparisons, the p-value was corrected using the Bonferroni method; a p-value less than 0.016 was considered statistically significant. Spearman correlation analysis was employed to examine the correlation between mDISCERN, GQS, and JAMA scores as determined by the two investigators, as well as the correlation between the GQS and JAMA scores themselves.

Results

In all, 120 videos were examined. Out of all the videos, 70 were removed, of which 20 were duplicates, 12 were irrelevant, 28 were not in English, and 9 contained inappropriate audio. The study includes the 50 videos that satisfied the inclusion criteria (Figure 1).

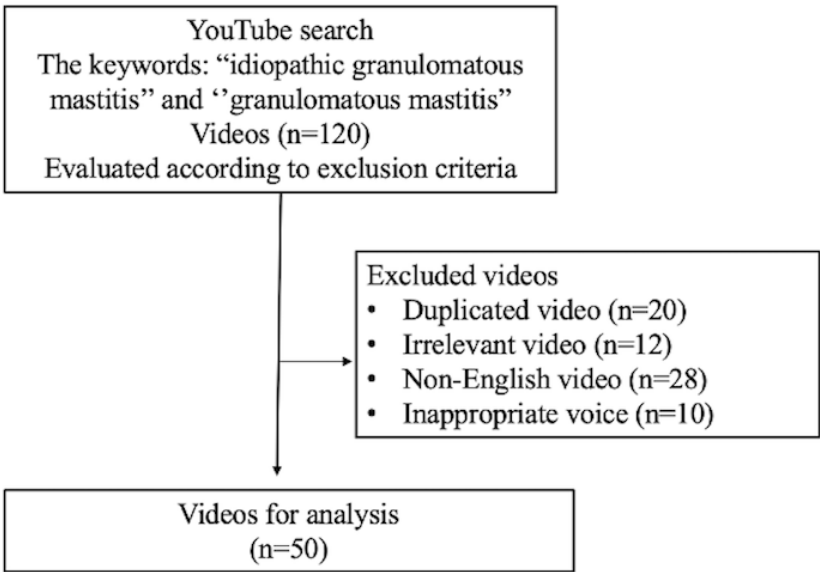


Figure 1. Flowchart illustrating the process of selecting a video

Of the remaining 50 videos, the median (IQR) number of views was 1419 (4075), the median (IQR) number of likes was 21 (46), and the median (IQR) number of daily views was 1.22 (3.61). The median (IQR) video length was 7 (16.65) minutes. The median (IQR) mDISCERN score was 3 (2). The median (IQR) GQS and JAMA video quality scores were 3 (2) and 3 (2), respectively. Of the 50 videos evaluated, 36 (72%) were rated as useful, 5 (10%) were rated as misleading, and

9 (18%) were rated as patient experience. When the videos were categorized by content, 33 (66%) provided an overview of IGM, 10 (20%) clinical findings, 4 (8%) pathogenesis, and 3 (6%) treatment of IGM. When the videos were categorized by source of upload, 23 (46%) were from physicians and 17 (34%) were from universities/professional organizations/associations. Other characteristics and video metrics are shown in Table 2.

Table 2. Initial features of the analyzed videos

Metrics for video	Value
Number of views, median (IQR)	1419 (4075)
Number of likes, median (IQR)	21 (46)
Number of dislikes, median (IQR)	0 (0)
Duration (min), median (IQR)	7 (16.65)
Number of video comments, median (IQR)	2 (21)
Like rate, median (IQR)	100 (0)
Accessibility duration, day, mean±SD	1185.5±751.4
Daily view rate, median (IQR)	1.22 (3.61)
VPI, median (IQR)	1.22 (3.44)
Quality and reliability scores	
mDISCERN, median (IQR)	3 (2)
JAMA, median (IQR)	3 (2)
GQS, median (IQR)	3 (2)
GQS-low (1-2), n (%)	19 (38)
GQS-moderate (3), n (%)	10 (20)
GQS-high (5), n (%)	21 (42)
Intended population, n (%)	
Patients	34 (68)
Health professionals	7 (14)
Both	9 (18)
Video source, n (%)	
Physicians	23 (46)
Independent users	1 (2)
Non-physician health professionals	1 (2)
Patient	8 (16)
University/professional organization/association	17 (34)
Video feature, n (%)	
Useful	36 (72)
Misleading	5 (10)
Patient experience	9 (18)
Video content, n (%)	
Clinical characteristics	10 (20)
Overview	33 (66)
Pathogenesis	4 (8)
Treatment	3 (6)

IQR: inter-quartile range, SD: standard deviation, min: minitus, mDISCERN: modified DISCERN score, VPI: video power index score, GQS: Global Quality Scale score, JAMA: Journal of the American Medical Association benchmark criteria score

Fifty videos were reviewed, with 23 (46%) submitted by physicians and 27 (54%) submitted by non-physicians. The two groups' data were compared. In terms of video duration, dislikes, comments, likes, accessibility, and clinical and treatment-related video elements, there was no significant difference between the two groups ($p>0.05$). The number of likes, daily view rate, and VPI score were significantly higher in the physician group ($p<0.05$). Quality and reliability scores of mDISCERN, JAMA, and GQS were significantly higher in the physician group ($p<0.001$). Videos

were significantly more useful in the physician group ($p<0.05$). In the physician group, video content included significantly more pathogenesis ($p<0.05$). In the non-physician group, video content included significantly more overview ($p<0.05$). The videos were significantly more misleading in the non-physician group ($p<0.05$). In the physician group, healthcare professionals made up a much larger portion of the target audience, while patients in the non-physician group were the intended viewers ($p<0.05$). Other characteristics are presented in Table 3.

Table 3. Comparison of video metrics between physician and non-physician groups

Metrics for video	Physicians group (n=23)	Non-physicians group (n=27)	p
Number of views, median (IQR)	2111 (6498)	723 (2315)	0.092
Number of likes, median (IQR)	33.5 (63.25)	12 (33.5)	0.017
Number of dislikes, median (IQR)	0 (0)	0 (0)	0.807
Duration, (min), median (IQR)	7.13 (35.96)	7.04 (9.97)	0.202
Number of video comments, median (IQR)	4.5 (29.25)	1 (13.5)	0.159
Like rate, median (IQR)	100 (0)	100 (0)	0.896
Accessibility duration, day, median (IQR)	1188±878	1183±638	0.913
Daily view rate, mean±SD	2.45 (6.69)	0.86 (1.11)	0.027
VPI, median (IQR)	2.45 (6.69)	0.75 (1.18)	0.022
Quality and reliability scores			
mDISCERN, median (IQR)	4 (1)	2 (3)	<0.001
JAMA, median (IQR)	3 (0)	2 (2)	<0.001
GQS, median (IQR)	4 (1)	2 (2)	<0.001
Intended population, n (%)			
Patients	12 (52.2)	22 (81.5)	0.027
Health professionals	7 (30.4)	(0)	0.002
Both	4 (17.4)	5 (18.5)	0.976
Video feature, n (%)			
Useful	21 (91.3)	15 (55.6)	0.005
Misleading	0 (0)	5 (18.5)	0.030
Patient experience	1 (4.3)	8 (29.6)	0.020
Video content, n (%)			
Clinical characteristics	5 (21.7)	4 (15.4)	0.566
Overview	11 (47.8)	23 (85.2)	0.007
Pathogenesis	4 (17.4)	0 (0)	0.042
Treatment	3 (13)	0 (0)	0.096

IQR: inter-quartile range, SD: standard deviation, min: minitus, mDISCERN: modified DISCERN score, VPI: video power index score, GQS: Global Quality Scale score, JAMA: Journal of the American Medical Association benchmark criteria score

When video parameters were compared between the high, medium and low quality groups, significant differences were found in views, likes, daily view rate, VPI, mDISCERN and JAMA score (p<0.016). In the post hoc analysis it was observed that the group that made the difference were the high quality videos. Other characteristics are shown in Table 4.

Table 4. Comparison of video metrics based on video quality groups

Metrics for video	Low (n=19)	Moderate (n=10)	High (n=21)	p	Post-hoc
Number of views, median (IQR)	674 (1688)	680 (2086)	3712 (8963)	0.004	I vs III, II vs III
Number of likes, median (IQR)	7 (31)	5 (34)	38 (58)	0.007	I vs III, II vs III
Duration, (min), median (IQR)	6 (8)	6 (15)	8 (56)	0.328	
Number of video comments, median (IQR)	1 (32)	0 (4.7)	6 (26)	0.041	
Like rate, median (IQR)	100 (0)	100 (0)	100 (0)	0.814	
Accessibility duration, day, mean±SD	1245±710	1221±528	1116±895	0.409	
Daily view rate, median (IQR)	0.6 (1)	0.8 (1.3)	4 (11)	<0.001	I vs III, II vs III
VPI, median (IQR)	0.5 (0.9)	0.8 (1.3)	3.9 (11)	<0.001	I vs III, II vs III
mDISCERN, median (IQR)	0 (2)	3 (0)	4 (0)	<0.001	I vs III, II vs III
JAMA, median (IQR)	0 (1.5)	0.27 (1)	3 (0.75)	<0.001	I vs III, II vs III

IQR: inter-quartile range, SD: standard deviation, min: minutes, mDISCERN: modified DISCERN score, VPI: video power index score, GQS: Global Quality Scale score, JAMA: Journal of the American Medical Association benchmark criteria score

The JAMA, mDISCERN, and GQS scores that the two researchers came up with had a robust positive correlation ($r=0.934$, 0.934 , and 0.888 , respectively, $p<0.001$).

A robust positive correlation existed between the GQS and JAMA quality assessment instruments ($r=0.917$, $p<0.001$) (Figure 2).

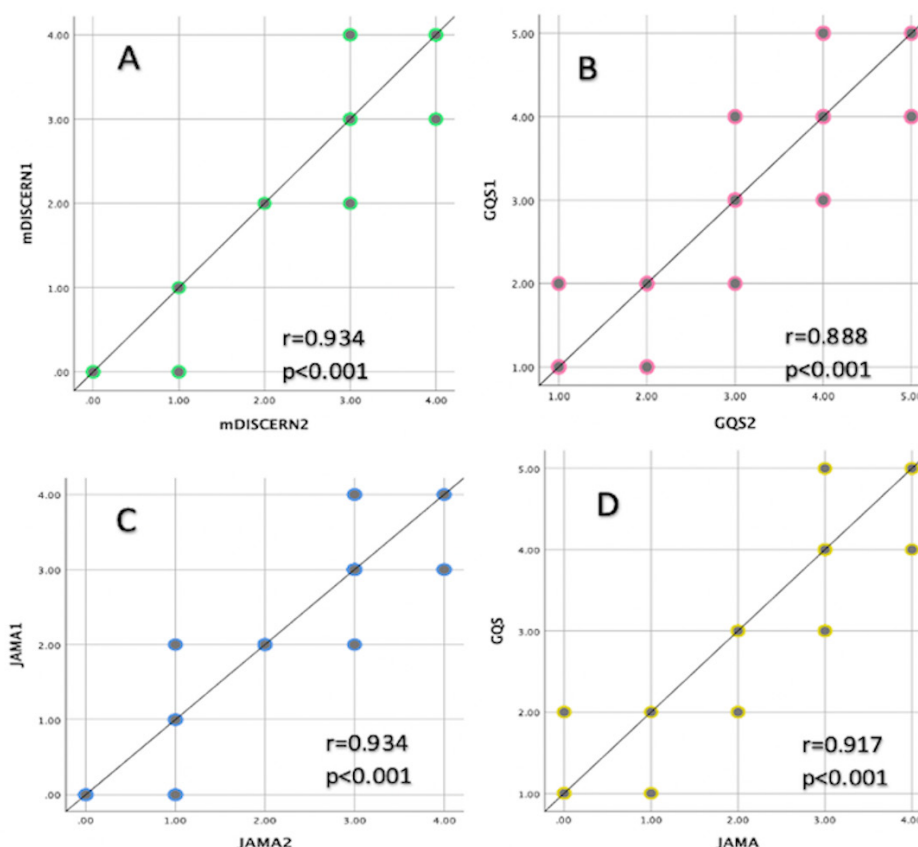


Figure 2. Correlation analysis among researchers of mDISCERN, JAMA, and GQS scores (A, B, C) and between GQS and JAMA scores (D)

Discussion

The Internet is increasingly regarded as a highly dependable source of health information. With the emergence of digital platforms, YouTube has evolved into a prevalent source of knowledge, encompassing health-related topics [15]. This study is, to our knowledge, the inaugural evaluation of YouTube videos related to IGM. This study examined 50 films that garnered 405,105 views and had a cumulative duration of 14.14 hours on January 4, 2025, revealing that YouTube serves as a prominent source of knowledge connected to IGM. In this study, the majority of IGM-related videos analyzed were related to an overview of IGM (66%). Approximately 2/3 of the videos were useful (72%). Nearly half of the videos were uploaded by physicians (46%). Videos uploaded by physicians were of higher quality and credibility. The target audience of the videos was mostly patients (30.9%).

One of the more uncommon benign inflammatory diseases of the breast is IGM. It is also likely to be underrecognized and more common than reported [24]. For this reason, patient awareness is low compared to more popular and common diseases. It would

not be wrong to say that people who develop clinical symptoms of this disease search for breast malignancies, which is one of the differential diagnoses and more known by people, before making this diagnosis. This study has shown that YouTube provides quality and useful information about IGM, but it should not be ignored that YouTube may also provide misleading information.

Numerous studies on YouTube have categorized video sources in various manners. The sources of video uploads differed between literature and YouTube studies on different diseases. In an analysis of YouTube videos about spondyloarthritis, 62% were created by healthcare experts [25]. In a YouTube analysis concerning pregnant RA, 51.8% of the videos were created by healthcare experts [14]. Önder et al. [26] noted in their study on osteoporosis that 68.5% of the videos were created by health-related persons and organizations. In the polymyalgia rheumatica study, 53.3% of the videos were produced by physicians [22]. In two other studies, the rate of videos produced by healthcare professionals was 46% in Behçet's disease and 41.7% in systemic sclerosis [27,28]. In this study, 46% of the videos were created by physicians, corroborating the existing literature.

When the results of YouTube studies on different diseases were analyzed, it was found that videos mostly provided useful information. It was reported that Limon et al. [12] 97% of the videos on ReA, Yağız et al. [14] 94.4% of the videos on pregnant RA patients, Coşkun et al. [15] 93.2% of the videos on FMF, Ng et al. [18] 67.8% of the videos on SLE were useful. In another study on gout, 87.72% of the analyzed videos were found to be useful [29]. Similar to the literature, YouTube videos on IGM provided useful information in this study (72%).

In YouTube studies of different diseases, video features with different quality ratios were presented. Research on different diseases revealed that physicians generated videos of excellent quality and reliability [30,31]. In the YouTube study of exercise videos for ankylosing spondylitis, the rate of high-quality videos was 48.2% [32]. Limon et al. [12] indicated that 48.5% of ReA videos were classified as high quality based on the GQS. The results of this study regarding video quality support the literature, and the number of views and likes of high-quality YouTube videos were found to be higher. This is due to the fact that high quality videos are presented in a more understandable and comprehensive manner and attract more attention from viewers. In addition, this study found no significant difference between the groups classified by GQS score in terms of video duration, number of comments, and view rates. These findings support the literature [27,29]. Consequently, YouTube users must to assess video quality beyond mere popularity indicators. In particular, they should prioritize video selection based on video sources.

Limitations

The study is cross-sectional and it should be noted that the results may change over time due to the constant updating of YouTube. We looked at the first 60 videos related to each keyword, which can be considered a limitation. We focused on examining English language videos that were easily accessible on YouTube. This may restrict the generalizability of our findings. Furthermore, although quality and reliability tools commonly used in YouTube studies showed high correlations between two independent investigators in this study, they are relatively subjective as they are investigator-based, which can be considered a limitation. There is a need to develop more objective tools in this regard.

Conclusion

Social media, particularly YouTube, has emerged as an essential information source for patients. However, these platforms may not always provide accurate information. In the case of misleading information, patients' treatment plans and communication with the physician may be negatively affected. This study can help physicians and other healthcare professionals to increase patient awareness of IGM and encourage them to create more information resources. In particular, physicians interested in IGM can play a greater role in producing quality and reliable

content in a multidisciplinary environment. Physicians must recognize the limitations of YouTube videos in their practice and inform patients accordingly. YouTube should consider pre-evaluating videos with scales such as mDISCERN, JAMA, and GQS before they are uploaded, if necessary, to prevent misleading videos.

Conflict of Interests

The authors declare that there is no conflict of interest in the study.

Financial Disclosure

The authors declare that they have received no financial support for the study.

Ethical Approval

The study doesn't involve participants, and YouTube is a public platform. Ethics committee approval wasn't required.

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