Youtube as a source of information on female infertility

Kadın infertilitesinde bilgi kaynağı olarak Youtube

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Abstract

Infertility impacts reproductive-age couples, female factors contributing 65% of all cases. Psychological and economic burdens are profound for women. Women experiencing infertility are subject to societal stigma, elevating risk of psychological distress and increased potential for domestic violence and economic hardship. Social media and internet have become a fundamental resource on health related topics. In a digital era, social media is a key source of health information, this study aims to evaluate content quality of YouTube videos on female infertility, addressing a critical gap in understanding the reliability of such information. This study analyzed YouTube videos via search terms: female/women infertility. These videos were assessed for content quality using the Global Quality Score (GQS), M-DISCERN, and PEMAT A/V Understandability. We recorded video attributes like duration, source. In our analysis of 77 YouTube videos, we found 37.7% (n=29) were uploaded by fertility clinics or hospitals, and 41.6% (n=32) contained advertising content. No videos from universities or academic institutions were included. It was observed 9.1% (n=7) of videos discussed social inequality and stigmatization. Videos with a negative tone, discussing alternative medical methods, or aimed at sharing personal experiences were found to have lower GQS scores (respectively, p=0.025, 0.005, 0.029). This study highlights a gap in high-quality YouTube content on female infertility, urging caution for patients seeking information. The scarcity of videos addressing social aspects like stigma in female infertility points to a need for more empathetic and comprehensive content. We advocate collaboration among healthcare professionals and academic institutions to enrich YouTube's infertility-related resources.

Keywords: Female Infertility, Youtube, video Quality, social media, online health

Özet

Kısırlık, üreme çağındaki çiftleri önemli ölçüde etkiler ve tüm vakaların yaklaşık %65'ine kadın faktörleri katkıda bulunur. Psikolojik ve ekonomik yükler özellikle kadınlar için çok belirgindir. Kısırlık yaşayan kadınlar toplumsal damgalamaya maruz kalmaktadır ki bu durum psikolojik sıkıntı riskini artırmakta ve aile içi şiddet ile ekonomik zorluklar için potansiyel oluşturmaktadır. Sosyal medya ve internet, çoğu konuda günümüzde temel bir bilgi kaynağı haline gelmiştir. Dijital medyanın sağlık bilgisi için önemli bir kaynak olduğu bir çağda, bu çalışma, kadın kısırlığı hakkındaki YouTube videolarının içerik kalitesini değerlendirmeyi ve bu tür bilgilerin güvenilirliğini anlamada kritik bir boşluğu ele almayı amaçlamaktadır. Bu çalışma, "female infertility, women infertility" arama terimlerini kullanarak YouTube videolarının ayrıntılı bir analizini yürütmüştür. Videolar, Küresel Kalite Puanı (GQS), M-DISCERN ve PEMAT A/V Anlaşılabilirliği gibi ölçeklerle içerik kalitesi açısından değerlendirilmiştir. Süre, kaynak, görüntülenme sayısı, beğeniler ve yorumlar gibi video özelliklerini de incelenmiştir. Analizlerde 77 YouTube videosunun, %37,7'sinin (n=29) doğurganlık klinikleri veya hastaneler tarafından yüklendiği ve %41,6'sının (n=32) reklam içerdiği görülmüştür. Üniversiteler veya akademik kurumlar tarafından yüklenmiş video bulunmamaktadır. Videoların %9,1'i (n=7) toplumsal eşitsizliği ve damgalanmayı ele almaktadır. Olumsuz tona sahip, alternatif tıbbi yöntemleri tartışan veya kişisel deneyimleri paylaşmayı amaçlayan videoların daha düşük GQS puanlarına sahip olduğu bulundu (sırasıyla, p=0,025, 0,005, 0,029). Çalışma, kadın kısırlığı konusunda yüksek kaliteli YouTube içeriğinde önemli bir boşluğu vurgulayarak, bilgi arayan hastalara dikkatli olmalarını öneriyor. Kadın kısırlığında damgalanma gibi toplumsal yönleri ele alan videoların eksikliği daha empatik ve kapsamlı içeriklere ihtiyaç duyulduğunu göstermektedir. Çalışma YouTube'un kısırlıkla ilgili kaynaklarını zenginleştirmek için sağlık profesyonelleri ve akademik kurumlar arasında iş birliği gereksinimini vurgulamaktadır.

Anahtar Kelimeler: Kadın infertilitesi, Youtube, sosyal medya, çevrimiçi sağlık

doi.org/10.35232/estudamhsd.1584166

ESTUDAM Public Health Journal. 2025;10(2):235-45.

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Geliş Tarihi / Received:
18.11.2024
Kabul Tarihi / Accepted:
06.05.2025

Introduction

Infertility represents a significant public health challenge worldwide, characterized by the inability to achieve a clinical pregnancy after 12 months or more of regular, unprotected sexual intercourse. This period is shortened to 6 months for women aged 35 and older due to declining fecundity (1). Estimated 186 million individuals globally suffer from infertility, affecting 8-12% of couples during their reproductive years (2). Trends in the United States, as reported by the National Survey of Family Growth, indicate that infertility affects approximately 6% of married women between the ages of 15 to 49 (3).

One-third of all infertility cases are attributed solely to female factors, while female factors contribute to around 65% of all cases (1, 4). Although male factors are also significant, the psychological and economic burdens of infertility disproportionately affect women, often exacerbated by cultural emphasis on motherhood as an integral aspect of female identity (2, 5).

Women experiencing with infertility are subject to societal stigma, elevating their risk of psychological distress including depression, anxiety, and low self-esteem, as well as increased potential for marital strain, domestic violence, and economic hardship (5, 6). A meta-analysis by Wang et al. highlighted a 36% prevalence of intimate partner violence within a year among infertile women, with the incidence being even higher in low- and middle-income countries (7).

Social media and the internet have become a fundamental resource on a broad spectrum of health related topics including infertility. Post-pandemic digitalization has empowered individuals to actively seek and engage with health information online, making platforms like YouTube more influential than ever due to reduced in-person consultations. The public increasingly turns to social media to address ongoing health concerns, obtain general daily life advice, learn about healthcare facilities and practitioners, and seek solutions to personal health-related queries (8). In the context of stigmatized issues like infertility, the internet and social media offer easily accessible and cost-effective resources for raising awareness and acquiring knowledge (9). In a qualitative study conducted by Hammarberg et al. on fertility-related knowledge and information-seeking behavior among individuals of reproductive age, most participants identified the internet as their primary information source, followed by input from friends, family, or healthcare professionals. However, some individuals reported a preference for relying solely on the internet due to embarrassment and the fear of stigmatization. Social media was also recognized as an optimal educational medium by participants, alongside primary healthcare providers, television, radio, and women's magazines (10). While social media usage can be informative for many, studies suggest that those who rely on scientific studies and medical professionals tend to possess more accurate knowledge compared to those who seek information online (9, 11, 12). Additionally, the reliability of data obtained from social media is often unconfirmed by healthcare professionals, and when confirmed, healthcare experts disagree with the provided information in 36.7% of cases (8). In light of these findings, evaluating the diversity and quality of social media content becomes imperative to understand the challenges faced by healthcare professionals, mitigate the spread of unreliable health information on social media, and improve public access to validated sources on health-related issues.

Among a variety of popular social media platforms, YouTube stands out as one

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Nasıl Atıf Yaparım / How to Cite:
Gülle B.T, Hoşcoşkun E.B, Mert E, Ertürk F.T, Tüker İ, Özünlü N.A. Youtube as a source of information on female infertility. ESTUDAM Public Health Journal. 2025;10(2):235-45.

This article was presented as an oral presentation at the 7th International and 25th National Congress on Public Health, held in Antalya on December 14–17, 2023.

of the most widely used, with over 2 billion users uploading and viewing hundreds of hours of video content every minute. Considering the amount of information shared and consumed and its prevalence among individuals of reproductive age, YouTube emerges as a vital social media platform to investigate as a source of information on female infertility (13).

This study aims to assess the content quality of YouTube videos focusing on female infertility. Our primary objectives were to identify prevalent themes within these videos, to distinguish high-quality content that can be relied upon to enhance the delivery of care and to contribute to the literature as the only study analyzing YouTube videos on female infertility.

Material and Method

Search and Data Extraction Process

A comprehensive search was executed on YouTube using the terms “female infertility” and “women infertility” on September 11th, 2023. These terms were selected for their widespread use and relevance to the topic of study. To ensure that search results were not tailored to previous browsing history, thereby preserving the impartiality of data, searches were conducted in incognito mode using a browser with no prior history or cookies, without logging into a YouTube account.

Acknowledging the previous researches on YouTube videos which typically analyzed the top 50 or 100 videos, we opted to review the top 75 videos for each keyword to achieve a balance between thoroughness and practicality (9, 14). Out of an initial 150 videos, we removed any that were duplicates, unrelated to the study’s focus, not in English, or exceeded 45 minutes in length, to standardize the content’s scope for analysis.

We recorded features of the videos, including duration, publishing channel, channel type (such as news, education, health organization, etc.), subscriber count, video upload date, likes, and comment count. Given YouTube’s updated privacy policies, data on dislikes were not available for collection.

Each video was reviewed by two independent researchers to assess the primary objective (informational or experiential), any discussion on social inequality or stigma related to female infertility, referral to alternative medicine, promotional or advertising content, and coverage of diagnostic, symptomatic, and treatment aspects. The tone of each video was categorized as positive, negative, or neutral, considering the video’s attitude towards the subject. Inter-rater reliability was evaluated using Cohen’s kappa, and discrepancies were resolved through discussion or with the involvement of a third reviewer who provided the final judgment. The view ratio, an indicator of engagement, was calculated by dividing the total views by the number of days since the video’s publication.

Quality Assessment Tools

Three different quality assessment tools, which are mentioned in the next paragraphs, were used to evaluate reliability and quality of the videos. Two researchers independently scored the Quality Assessment Tools, and in case of discrepancies, a third researcher made the final decision.

Global Quality Score (GQS)

The GQS, is a five-point Likert scale developed by Bernard et al. for evaluating the overall quality of online content. The scoring of the scale is determined by evaluating the content’s quality, flow, coverage of important issues, and how helpful it is to patients, with scores ranging from 1 to 5. If the content is of poor quality, has poor flow, most information is missing, and is not at all useful for patients, it receives a “1”; if it is of excellent quality and flow and is very useful for patients, it receives a “5” (15).

Modified DISCERN (M-DISCERN) Scale

M-DISCERN scale is adapted by Singh et al. from the original DISCERN tool that is developed by Charnock et al. for assessing quality of health information (16, 17). This scale is scored by coding the video based on five questions that assess the clarity of the video’s purpose, the reliability of the sources used, the unbiased nature of the information provided, the listing of additional resources, and the mention of areas of uncertainty with a “yes” (1 point) or “no” (0 points) response (17, 18). In conclusion, each video gets a score between 0 (very low) and 5 (very high) in total and higher points indicate better reliability (17, 19, 20).

Patient Education Materials Assessment Tool for Audiovisual Materials (PEMAT-A/V)

PEMAT A/V is developed by Shoemaker et al. for evaluating the understandability and actionability of printed and audiovisual materials. For this reason, there are two versions of this tool: PEMAT-P (For printable materials) and PEMAT-A/V (For audiovisual materials). In this study, we used PEMAT-A/V for evaluating YouTube videos. This version of the tool consists of 13 items for understandability and 4 items for actionability, adding up to 17 items in total (21, 22). Each item can be rated as 1 (agree), 0 (disagree), and if there is “not applicable” option, an item also can be graded as NA (not applicable). Thus, two scores are obtained separately for understandability and actionability. Each score is calculated as the ratio of the sum of ratings given as “agree” to the total number of items excluding those rated as not applicable, from which the percentage is calculated (21). Videos with scores above 70% are indicated as understandable and actionable (22). Description of items are shown in Table 1 (21).

Table 1: Patient education materials assessment tool for audiovisual materials

Understandability	
Rating	**Items**
0-1	The material makes its purpose completely evident.
0-1	The material uses common, everyday language.
0-1	Medical terms are used only to familiarize audience with the terms. When used, medical terms are defined.
0-1	The material uses the active voice.
0-1-NA (NA=Very short material)	The material breaks or "chunks" information into short sections.
0-1-NA (NA=Very short material)	The material’s sections have informative headers.
0-1	The material presents information in a logical sequence.
0-1-NA (NA=Very short material)	The material provides a summary.
0-1-NA (NA=Video)	The material uses visual cues (e.g., arrows, boxes, bullets, bold, larger font, highlighting) to draw attention to key points.
0-1-NA (NA=No text or all text is narrated)	Text on the screen is easy to read.
0-1-NA (NA=No narration)	The material allows the user to hear the words clearly (e.g., not too fast, not garbled).
0-1-NA (NA=No visual aids)	The material uses illustrations and photographs that are clear and uncluttered.
0-1-NA (NA=No tables)	The material uses simple tables with short and clear row and column headings.
Actionability	
Rating	**Items**
0-1	The material clearly identifies at least one action the user can take.
0-1	The material addresses the user directly when describing actions.
0-1	The material breaks down any action into manageable, explicit steps.
0-1-NA (NA=No charts, graphs, tables, diagrams)	The material explains how to use the charts, graphs, tables, or diagrams to take actions.

Ethics

Ethics committee approval was not necessary as YouTube videos are openly accessible to the public for free. Videos that were included in the research had no age restriction and were open to the public without logging into a YouTube account. This study does not contain any human or animal resources and no patient data were used.

Statistical Analysis

In our study's statistical analysis, the Shapiro-Wilk test was used to assess the normal distribution. For numerical data exhibiting a normal distribution, mean and standard deviation were provided in the descriptive analysis, while for numerical data not showing normal distribution, median and interquartile range values were given. For categorical data, numbers and percentages were reported. Independent samples t-tests were used for comparisons between two groups for parametric data, and the Mann-Whitney U test for non-parametric data. For comparisons among more than two groups, one-way ANOVA was used for parametric data and the Kruskal-Wallis test for non-parametric data. Bonferroni correction was applied in the post-hoc analyses of significant findings. For correlation analysis, Pearson's test was used for parametric data and Spearman's correlation tests for non-parametric data, with the correlation coefficient being assessed as 0-0.19 for very weak, 0.20-0.39 for weak, 0.40-0.59 for medium, 0.60-0.79 for strong, and 0.80-1.00 for very strong. Inter-rater reliability was assessed using Cohen's kappa coefficient for categorical variables. A p-value of <0.05 was considered statistically significant, and the analyses were performed using the Statistical Package for the Social Sciences (SPSS) version 29.0.

Results

In the initial set of 150 YouTube videos identified, 73 were excluded from the study based on specific criteria: 35 were duplicates, 31 were not in English, six had a duration exceeding 45 minutes, and one was not relevant to the research topic. The median duration of the 77 videos that were included, which came from 61 different YouTube channels, was 3 minutes and 49 seconds (IQR: 1:55-6:48). Of these, 37.7% (n=29) were published on channels belonging to fertility clinics or hospitals, and 32.5% (n=25) on channels by independent individuals or groups providing medical educational content. Descriptive characteristics of the videos are detailed in Table 2. Inter-rater reliability was found to be high across all categorical variables, with Cohen's kappa values exceeding 0.75, indicating substantial agreement between the two independent coders.

Table 2: Features of YouTube videos

Characteristics of studies	Total (n=77)
Duration (minute: second), median (IQR)	03:49 (1:55-6:58)
Number of views, median (IQR)	6587 (1316-41751)
Total number of views, sum	12540452
GQS, mean±SD	3.0±0.9
M-DISCERN, mean±SD	2.5±0.8
PEMAT A/V Understandability, mean±SD	65.2±15
PEMAT A/V Actionability, median (IQR)	17 (0-50)
Number of likes, median (IQR)	65 (15-291)
Number of comments, median (IQR)	14 (2-58)

Negative tone, number (%)	13 (16.9)
Neutral tone, number (%)	32 (41.6)
Positive tone, number (%)	32 (41.6)
View Ratio, median (IQR)	6.5 (1.1-28.3)

SD: standard deviation; IQR: interquartile range; GQS: Global Quality Scores; M-DISCERN: Modified DISCERN; PEMAT A/V: Patient Education Materials Assessment Tool for Audiovisual Materials

While 7 videos (9.1%) mention social inequality and stigmatization, it has been observed that 32 videos (41.6%) contain advertisements. Diagnostic methods of female infertility are discussed in 31 videos (40.3%), symptoms in 27 (35.1%), and treatment methods are mentioned in 36 (46.8%). Statistical analyses showed significant relationships between the GQS and the tone, objective, and mention of alternative medicine in the videos (respectively, p=0.025; 0.029; 0.005). A statistically significant relationship was also found between the M-DISCERN score and videos that mentioned alternative medicine (p=0.019). The relationships between the videos' objectives, tones, emphasis on stigmatization or social inequality, mentions of alternative medicine, inclusion of advertisements, and discussions of infertility diagnosis, symptoms, and treatments with the GQS and M-DISCERN scores are presented in Table 3. A statistically significant relationship was found between the PEMAT A/V Understandability score and videos discussing diagnostic methods and infertility symptoms, as shown in Table 4. Additionally, 27 videos (35.06%) scored above 70 in PEMAT A/V Understandability, whereas nine videos (11.69%) scored above 70 in Actionability.

Table 3: The relationship between video characteristics and GQS and M-DISCERN scores

Variables		**GQS Mean±SD**	**p**	**M-DISCERN Mean±SD**	**p**
Tone of video	Negative	2.46±0.52	**0.025**[a]	2.15±0.69	0.141
	Neutral	3.22±0.87		2.65±0.79	
	Positive	3.00±0.88		2.50±0.77	
Aim of video	Information	3.07±0.86	**0.029**	2.52±0.74	0.614
	Life Experience	2.38±0.51		2.38±1.06	
Stigmatizasion/Social injustice	Yes	2.71±0.49	0.359	2.41±1.13	0.781
	No	3.03±0.88		2.51±0.74	
Alternative medicine	Yes	2.14±0.69	**0.005**	1.86±0.69	**0.019**
	No	3.09±0.83		2.57±0.75	
Advertisement	Yes	2.94±0.88	0.593	2.56±0.62	0.595
	No	3.04±0.85		2.47±0.87	

Diagnosis	Yes	3.23±0.99	0.075	2.65±0.66	0.197
	No	2.85±0.73		2.41±0.83	
Semptom	Yes	3.15±0.82	0.269	2.63±0.63	0.307
	No	2.92±0.88		2.44±0.84	
Treatment	Yes	3.17±0.97	0.111	2.61±0.77	0.268
	No	2.85±0.73		2.41±0.77	

[a] There is a statistically significant difference between negative and neutral-toned videos (p=0.021).
GQS: Global Quality Scores; M-DISCERN: Modified DISCERN

Table 4: The Relationship between video characteristics and PEMAT A/V quality scores

Variables		**PEMAT A/V Understandability Mean±SD**	**p**	**PEMAT A/V Actionability Median (IQR)**	**p**
Tone of video	Negative	59.08±13.83	0.275	0 (0-33)	0.145
	Neutral	66.34±16.65		9 (0-62.8)	
	Positive	66.50±13.36		33 (4.3-62.8)	
Aim of video	Information	65.96±15.48	0.184	17 (0-58.5)	0.214
	Life Experience	58.50±6.72		8.5 (0-33)	
Stigmatization/Social injustice	Yes	62.14±10.42	0.576	33 (17-33)	0.993
	No	65.49±15.36		17 (0-54.3	
Alternative medicine	Yes	65.16±15.20	0.964	50 (17-83)	0.115
	No	65.43±13.28		17 (0-50)	
Advertisement	Yes	64.91±16.56	0.893	33 (4.3-50)	0.216
	No	65.38±13.90		0 (0-58.5)	
Diagnosis	Yes	69.77±13.90	**0.026**	33 (0-67)	0.411
	No	62.09±14.99		17 (0-50)	
Symptom	Yes	70.214.51	**0.028**	33 (0-67)	0.173
	No	62.44±14.60		17 (0-50)	
Treatment	Yes	66.61±14.43	0.436	33 (0-50)	0.285
	No	63.93±15.47		0 (0-50)	

SD: standard deviation; IQR: interquartile range; PEMAT A/V: Patient Education Materials Assessment Tool for Audiovisual Materials

The correlations between the methods used in quality assessment were examined, revealing statistically significant correlations between GQS and M-DISCERN, as well as between GQS and PEMAT A/V Understandability (respectively; r=0.345, p<0.001; r=0.468, p< 0.001). A statistically significant correlation was also observed between M-DISCERN and PEMAT A/V Understandability (r=0.375, p< 0.001), as detailed in Table 5. There was a statistically significant weak negative correlation between the M-DISCERN score and the number of likes (r=-0.271, p<0.05). A weak positive correlation was noted between the PEMAT A/V Actionability score and the view ratio, and a moderate positive correlation was observed between the upload date and the PEMAT A/V Actionability score (respectively, r=0.243, p<0.05; r=0.355, p<0.05). The correlations between the Quality Assessment tools and the characteristics of the videos are provided in Table 6.

Table 5: Correlations of quality assessment tools

Quality Assessment Tools	M-DISCERN	PEMAT A/V Understandability	PEMAT A/V Actionability
GQS	0.349*	0.468*	0.107
M-DISCERN		0.375*	0.186
PEMAT A/V Understandability			0.150

**p<0.05; GQS: Global Quality Scores; M-DISCERN: Modified DISCERN; PEMAT A/V: Patient Education Materials Assessment Tool for Audiovisual Materials*

Table 6: Correlations of quality assessment tools and features of videos

Quality Assessment Tools	View Ratio	Number of views	Number of likes	Number of comments	Date of upload	Duration	Number of subscribers
GQS	-0,019	0,039	-0,047	0,014	0,036	0,066	-0,133
M-DISCERN	-0,159	-0,151	-0,271*	-0,152	0,055	-0,074	-0,171
PEMAT A/V Understandability	-0,028	-0,04	-0,043	0,029	0,047	-0,114	-0,173
PEMAT A/V Actionability	0,243*	0,022	0,044	0,027	0,355*	-0,033	-0,023

**p<0.05; GQS: Global Quality Scores; M-DISCERN: Modified DISCERN; PEMAT A/V: Patient Education Materials Assessment Tool for Audiovisual Materials*

Discussion

YouTube, as a free and easily accessible platform, offers a wealth of information on various topics, including health-related ones (23). Consistent with this, it has been identified that the videos included in our study have been viewed more than 12 million times, highlighting the platform's significant role as a source of information for infertility patients who frequently seek health information online. This data highlights the growing responsibility of video-sharing platforms in disseminating reliable and evidence-based medical content.

Most of the videos (38%) included in our research were published by either fertility clinics or hospitals, followed by medical educational content (33%) channels. There are no videos published by a university or an academic institution included in the study. Additionally, it was observed that 41.6% contained advertising content. In the study by Ku and colleagues, which analyzed 42 YouTube videos related to male infertility, it was found that only 2 of the contents were produced by research or academic organizations (9). In the same study, it was found that the majority of the videos were

uploaded by healthcare organizations or providers. In the male infertility videos, all emphasize diagnostic tests, with a significant portion (71%) discussing treatment methods (9). In contrast, in female infertility videos, 40.3% mention diagnostic methods, and treatments are featured in 46.8% of the videos.

Despite the significance of stigmatization in female infertility, it was found in our study that only 7 videos (9.2%) addressed this issue (24–26). Videos on female infertility being predominantly created by private health institutions, many of which contain advertisements, raises concerns about potential bias, as the primary objective of such videos may not be solely to inform but also to market specific treatments, clinics, or medical services. As a result, the presentation of infertility-related information could be selectively framed to highlight particular treatment options while downplaying risks, limitations, or alternative approaches. The absence of academically produced content further exacerbates this issue, as users may struggle to differentiate between evidence-based medical guidance and promotional narratives. Moreover, the scarcity of videos discussing fundamental aspects such as diagnosis, symptoms, and treatment options in a comprehensive, neutral manner could hinder viewers from accessing well-rounded and unbiased information. This commercial influence on YouTube's infertility-related content may lead to misconceptions, heightened anxiety, or decision-making based on incomplete or skewed information rather than medically validated knowledge.

In a study that analyzed 202 health-related videos on YouTube, the average GQS was found to be 2.68, and the average DISCERN score was 2.36 (13). In line with the literature, our study found an average GQS of 3 and an M-DISCERN average of 2.5. In our study, the average PEMAT A/V Understandability score was found to be 65.2%, and the median value for Actionability was 17%. In a study analyzing 78 YouTube videos about vasectomy, the average PEMAT A/V Understandability and Actionability scores were found to be 67.6% and 33.8%, respectively (27). In another study that included 50 YouTube videos on varicocele treatment, the average PEMAT A/V Understandability and Actionability scores were found to be 69.8% and 11%, respectively (28). The PEMAT A/V scores found in these studies are similar to the results observed in our research.

It has been observed that videos adopting a negative tone, including personal experiences and incorporating alternative medicine tend to have lower GQS ratings. Furthermore, videos mentioning alternative medical methods also tend to have lower M-DISCERN scores.

In our study, it was determined that 16.9% of the videos had a negative tone, and 41.6% had a positive tone. In contrast, a 2018 study on infertility-related videos found no videos with a negative tone, with 74% being positively toned (29). This difference may be related to a distinct perspective on female infertility and a tendency towards a less positive perception.

Content creators who share their personal experiences might not have the intention to educate but simply share what they have gone through. Therefore, it might be expected for these videos to score lower than educational videos. However, this does not change the fact that a considerable number of patients will acquire knowledge through these videos. Personal experience videos were found to have more likes and comments, thus more engagement (29). In consideration of these circumstances, individuals are advised to vary when engaging with videos of this nature.

In our study, it was observed that videos containing alternative medicinal remedies also had lower GQS ratings. This finding has been similarly observed in a study focusing on erectile dysfunction videos (14). The implications of these lower scores are multifaceted. For one, individuals without a healthcare background might struggle to discern between reliable and unreliable information. Furthermore, a narrow focus on specific topics could lead to an oversight of other critical aspects of female infertility. It's also important to consider that the creators of these videos might have motives beyond simply disseminating information, such as promoting services or products.

Weak to moderate correlations were observed between the GQS, M-DISCERN, and PEMAT A/V Understandability tools, while no significant correlation was found between PEMAT A/V Actionability scores and other tools (Table 5). It

was noted that there is no relationship between the quality and understandability of female infertility videos and their ability to prompt action. The correlations between the Quality Assessment Tools and the characteristics of the videos that were found to be statistically significant (Table 6) are also weak. Popularity (views, likes, and comments) of a video does not show a strong relationship with the quality of the videos.

To the best of our knowledge, this study represents the first attempt to analyze YouTube content with a specific focus on female infertility. However, this study has some limitations. Considering YouTube's dynamic nature, choosing the top 75 videos at a particular moment may not be able to precisely capture the content that patients engage with each time. Besides, the search for YouTube videos was conducted exclusively in English, since we aimed to reach out to the top videos globally. However, given the global nature of infertility issues, non-English videos could provide diverse perspectives, region-specific information, or culturally tailored discussions that were not captured in our analysis. Against all measures, other unknown factors could have also played a role in influencing YouTube's search algorithm and determining which videos are displayed. Due to YouTube's removal of the visible dislike count in 2021, we weren't able to compare our findings with previous literature that used the dislike feature as a metric. Even though we did not aim to evaluate the accuracy of the information given in each individual video, the absence of a specialist in Obstetrics and Gynecology within our research team could also be considered a limitation.

Conclusions

In conclusion, YouTube videos are an important informational resource for female infertility; however, considering our results, there is lack of high-quality content on the platform. For this reason, patients seeking medical information about female infertility should be cautious when using YouTube. The number of videos addressing social issues in female infertility, such as stigma and inequality, is also found to be remarkably limited. To better assist patients, we suggest that content creators in these categories consider the multidimensional nature of infertility with a more comprehensive approach. Therefore, health institutions and universities could be encouraged to produce more content presenting evidence-based information. Besides, in order to present content in more understandable and accessible formats, the interaction of content can be increased through subtitle support, content based on patient experiences and interactive information methods. Guidance videos, content evaluation criteria and in-platform verification systems can be developed to increase digital health literacy. Thus, users can evaluate the information they encounter on YouTube in a more informed way.

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