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Is YouTube Content Useful for Doctors at Different Career Stages?

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ABSTRACT

Objective: Online-based educational programs are important tools in medical education today. Platforms such as YouTube can be used not only for entertainment but also for educational purposes. However, is the information on these platforms educational for medical people at different levels?

Methods: The 100 most-viewed videos were identified by typing the term “colposcopy” in the YouTube search bar, and after fulfilling the exclusion criteria, the number of views, number of likes, video duration, type of content, and source of the uploader were recorded. The reliability of the information in the videos was assessed via the Journal of the American Medical Association (JAMA) benchmark score, and the quality of education was assessed via the Global Quality System (GQS). The videos were then viewed by a medical student who had completed an obstetric internship, an obstetric resident and a postresident obstetrician and asked whether they had found the videos.

Results: When the criteria were applied, 62 videos were included in the review. The videos had a GQS of 2.5 ± 1.2 and a JAMA score of 2.1 ± 1.1. The medical students reported that 61.3% of the videos were educational, whereas the obstetric residents reported that 53.2% were educational. The postresident obstetrician reported that only 4.8% were educated. The videos uploaded by the medical group were significantly more educational and more reliable.

Conclusion: YouTube videos are important resources for medical education. However, watching videos from reliable sources is more beneficial for education.

Keywords: Medical Education, YouTube, Educational Video

INTRODUCTION

The methods of learning have evolved significantly over time. For centuries, knowledge was transmitted primarily through books and teachers. Today, however, online-based learning platforms such as Khan Academy, Udemy, and MasterClass facilitate the rapid dissemination of reliable information. Freely accessible social media platforms such as YouTube, Twitter and Instagram are also frequently used for educational purposes. In an age in which internet use is ubiquitous, social media and video platforms are no longer just for entertainment but are also valuable sources of education and information. A meta-analysis indicated that approximately 20% of medical students use social media platforms to access educational content.[1] Moreover, one study reported that a significant proportion of young urologists surveyed reported using YouTube rather than reference books to learn surgical techniques and prepare for surgeries.[2] Owing to its low cost, social media has proven to be an ideal medium for disseminating information.[3] YouTube, the largest internet-based visual information and entertainment platform, records over 2 billion daily views.[4] However, because videos uploaded to YouTube are not subject to peer review, content is often posted without verification of its accuracy or validity. As a result, misinformation can be widely disseminated.

Both the millennial and Generation Z generations are particularly active in using social media to acquire new knowledge.[5] The visual educational capabilities of YouTube are significant, with 91% of its audience between the ages of 18 and 29.[6] It is reasonable to predict that as these generations enter medical school and residency programs, they will increasingly rely on social media for education, especially in fields such as radiology and surgery, where visual instruction is critical.

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Colposcopy is an essential procedure for detecting precancerous lesions in women whose tests are positive during cervical screening.[7] The technique involves staining the cervix with acetic acid, followed by microscopic examination and biopsy of suspicious areas.[8] The ability to perform the procedure with proficiency necessitates visual training to discern specific staining patterns. To this end, the International Agency for Research on Cancer has developed the freely accessible "Atlas of Colposcopy" to assist in the acquisition of these fundamental competencies.[9] Given the visual nature of YouTube, we postulated that it could serve as an optimal setting for colposcopy education. The objective of our study is to assess the role of YouTube, in terms of educational accuracy and reliability, in the training of healthcare professionals at various stages of their careers in the field of colposcopy, which necessitates visual and surgical abilities as well as theoretical knowledge.

METHODS

The YouTube algorithm makes suggestions on the basis of viewing history. A new YouTube account was created to ensure unbiased video recommendations, and the site was accessed via the web browser's incognito mode. The term "colposcopy" was entered into the YouTube search bar, and the top 100 most-viewed videos as of August 2024 were filtered and analyzed. Only English-language videos with acceptable sound and image quality were considered. The exclusion criteria included videos in languages other than English, videos without sound or images and videos unrelated to colposcopy. The duration, number of likes and number of views were recorded for each eligible video. The videos were categorized into four groups on the basis of their content: surgical technique, personal experience, information about procedures or diseases and commercial content. The sources of the videos were categorized as academic (authors affiliated with a university or teaching hospital), physician, patient or commercial.

The videos were reviewed by a gynecologist, an obstetric resident and a medical student who participated in the colposcopy procedure as observers who had completed an obstetric internship. After watching all the videos one time, they were asked to judge whether the videos were educational. The accuracy and reliability of the videos were assessed via the Journal of the American Medical Association (JAMA) benchmark score proposed by Silberg, which includes four criteria.[10] The educational quality of the videos was assessed via the Global Quality System (GQS), which is graded on a scale of 1--5.[11] These tools have been validated as methods for evaluating information quality on the internet. The Jama score is used to evaluate 4 domains: authorship, attribution, disclosure and current content.[10] Each domain receives 1 point, and the total score is 4. The Jama score reflects the reliability and accuracy of the content rather than its quality. The GQS score is a tool that is evaluated out of 5 points and measures the educational quality of the content.[11] Each video was rated according to these two systems.

Since publicly available data were used, ethics committee approval was not needed.

Statistical Analysis

The means, standard deviations, medians, minimums, maximum value frequencies and percentages were used for descriptive statistics. The distribution of variables was checked with the Kolmogorov–Smirnov and Shapiro–Wilk tests. The Mann–Whitney U test was used for the comparison of quantitative data. The chi-square test was used for the comparison of the group data. Significance was defined as $P < .05$. SPSS version 27.0 (IBM SPSS Corp., Armonk, NY, USA) was used for the statistical analyses.

RESULTS

After applying the criteria, 62 videos were included in the analysis. The median duration of the videos was 307 seconds, and the median number of views was 97. The sources of the videos were as follows: 5 were uploaded by academic institutions, 28 by physicians, 1 by a patient, and 18 by commercial entities. In terms of content, 37 videos provided information about the colposcopy procedure. The descriptive data are summarized in Table 1.

Table 1. Destrictive Data's of Videos

		Min–Max	Median	Mean±SD/n-%
Time (minute)		28.0 - 18000.0	307.0	934.5 - 2498.4
Views (x10³)		10.0 - 2300.0	37.5	97.0 - 291.5
Likes		0.0 - 3200.0	194.0	391.5 - 582.8
GQS Score		1.0 - 5.0	2.0	2.5 - 1.2
JAMA Score		1.0 - 4.0	2.0	2.1 - 1.1
Source	Academic			5 8.1%
	Physician			28 45.2%
	Patient			11 17.7%
	Commercial			18 29.0%
Content	Surgical Technic			10 16.1%
	İnformation			37 59.7%
	Personal Experience			12 19.4%
	Commercial			3 4.8%
Educational Content				
Postresident	(+)			3 4.8%
	(-)			59 95.2%
Resident	(+)			33 53.2%
	(-)			29 46.8%
Student	(+)			38 61.3%
	(-)			24 38.7%

JAMA: Journal of the American Medical Association; GQS: Global Quality System; SD: standart deviation

With respect to educational content, 38 medical students, 33 residents, and 3 postresidents found the videos educational. The video uploaders were categorized into two groups: the "medical group" (academic and physician sources) and the "nonmedical group" (commercial and patient sources). The medical group had significantly higher GQS and JAMA scores ($P < .05$) and was superior in terms of educational content (Table 2).

Table 2. Educational Quality and Reliabiliy Scores

		Non-Medical (n:29)			Medical (+) (n:33)			*P*	
		Mean±sd/n-%		Median	Mean±SD/n-%		Median		
GQS Score		1.8	± 1.0	1.0	3.0	± 1.0	3.0	.000	m
JAMA Score		1.6	± 0.8	1.0	2.5	± 1.1	2.0	.000	m
Post Resident	(+)	0	.0%		3	9.1%		.241	X²
	(-)	29	100.0%		30	90.9%			
Resident	(+)	8	27.6%		25	75.8%		.000	X²
	(-)	21	72.4%		8	24.2%			
Student	(+)	12	41.4%		26	78.8%		.003	X²
	(-)	17	58.6%		7	21.2%			

[m] Mann-whitney u test / [X²] Chi-square. JAMA: Journal of the American Medical Association; GQS: Global Quality System; SD: standart deviation

DISCUSSION

Video-based training has become an important tool for improving the acquisition of surgical and clinical skills by healthcare professionals.[12] Video-based learning offers several advantages, especially for surgical techniques where visual learning is essential. In addition, video-based platforms enable internet-based training, which has proven invaluable during the COVID-19 pandemic when face-to-face teaching is limited. In addition, increasing restrictions on working hours, particularly in specialty training, have reduced the time available for practical training. In surgical specialties, where the mentor–apprentice relationship is crucial, the reduced training hours can be partially

offset by the use of surgical videos on platforms such as YouTube. For example, a study demonstrated that general surgery residents who watched colectomy videos before surgery performed the procedure more successfully than those who did not watch videos.[13] This and similar studies highlight the value of video resources such as YouTube in surgical education. In our study, we observed that residents and medical students, who were still in the process of learning, found YouTube videos useful educational tools. In contrast, individuals who had completed residency reported benefiting from only three of the nearly one hundred videos they watched. This suggests that the educational value of YouTube videos decreases as expertise increases. Therefore, YouTube is more useful for learners than for experts in a particular field.

One limitation of YouTube as an educational platform is that content creators from around the world can upload videos on any topic without any prerequisites or qualifications, which can lead to a decline in the quality of content. In general, there is often a negative correlation between the number of views a video receives and the quality of its content. For example, in one study, when "laparoscopic cholecystectomy" was entered into YouTube's search engine, an evaluation of the top videos revealed that many demonstrated suboptimal techniques, with more than half displaying unsafe maneuvers and only 10% deemed satisfactory.[14] Another study reported that the most popular thyroidectomy video hosts on YouTube had no scientific publications on thyroid surgery. This finding highlights the lack of correlation between the popularity of a video and the academic expertise of the uploader.[15] These studies emphasize the need for people searching for educational videos to carefully evaluate the source of the content and not rely on popularity or the number of views alone. Our findings also emphasize that for educational purposes, it is more important to check the credentials of the content creator than to consider the number of views.

A closer examination of our study reveals that in terms of educational quality and content reliability, a significant portion of videos on YouTube can be classified as "garbage." In our study, the average GQS was 2.5±1.2, and the Jama score was 2.1±1.1. This situation was much lower, especially in the nonmedical group (1.8±1 and 1.6±0.8, respectively). This is especially true for videos uploaded by individuals without a medical background, which tend to have very low educational value. Helming et al. reported similar results in their systematic review. Thirty-one studies were examined, the average Jama score was 1.3, and the GQS score was 1.7. He emphasized that these scores decreased much more in nonacademic group posts.[16] Studies have shown that only 36% of health-related videos on YouTube are uploaded by reliable sources, such as official organizations or health professionals, whereas the remaining 63.7% come from unreliable sources with unverifiable affiliations.[17] Conversely, videos produced by professional associations or government organizations are typically the most reliable.[18] Many surgical journals also utilize social platforms such as YouTube and Twitter to promote education by providing content that combines information and infotainment. Scientifically reliable material is often shared on these platforms, e.g., surgical videos that support published articles and are created directly by the authors themselves. Additionally, many medical associations upload online seminars or webinars to their YouTube channels, thereby disseminating scientifically validated, peer-reviewed information to a global audience. Dr. Alhasan, who manages the YouTube channel for Surgery magazine, notes both advantages and disadvantages in using YouTube. The benefits of the platform include providing a reliable source of information, open and retrievable access and the 'humanization of literature' to make it accessible to a wider audience. However, there are still concerns about copyright and ethical issues.[19]

The rise of social media has also fuelled health-related debates. For example, during the COVID-19 pandemic, platforms such as Twitter, Instagram and YouTube played important roles in organizing resistance to vaccination. Similarly, discussions on these platforms led to the banning of plastic mesh in vaginal surgeries in several countries. Victims of mesh complications used these platforms in collaboration with support groups to organize and raise awareness, declaring May 1st as International Mesh Awareness Day.[20] These examples highlight the great impact of social media.

This study, which was conducted with individuals at three different points in their careers, is noteworthy in this respect. One of the most important limitations of this study is that it was conducted with a small number of people. However, since YouTube is a dynamic platform, these results are dependent only on the date and people on which it was carried out. Conducting similar studies on a larger sample size will yield more reliable results.

CONCLUSION

In the modern era, YouTube videos have become valuable supplementary tools in medical education, particularly in surgical training, where visual aids are crucial. However, individuals must exercise caution and critical thinking when engaging with these resources, opting for videos from reputable sources such as official medical associations or medical journals known for their educational quality. These institutions should also strive to leverage the YouTube platform more effectively to remain current and accessible to a global audience. The role of YouTube in medical education is increasing, but higher-quality content needs to be encouraged.

Ethics Committee Approval: Since the study was conducted with public data, no ethics committee decision was needed.

Informed Consent: Verbal consent was obtained from the people who evaluated the videos.

Peer-review: Externally peer-reviewed.
Author Contributions: Concept – AB, HCS; Design – AB, HCS; Supervision - AB; Resources -AB, HCS, SA; Materials - AB, HCS, SA; Data Collection and/or Processing - AB, HCS, SA; Analysis and/or Interpretation - AB; Literature Search -AB; Writing Manuscript - AB; Critical Review - AB;

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