ORIGINAL ARTICLE

Assessing the Content of YouTube Videos in Educating Patients Regarding Common Imaging Examinations

Andrew B. Rosenkrantz, MD, MPA, Eugene Won, MD, Ankur M. Doshi, MD

Abstract

Purpose: To assess the content of currently available YouTube videos seeking to educate patients regarding commonly performed imaging examinations.

Methods: After initial testing of possible search terms, the first two pages of YouTube search results for "CT scan," "MRI," "ultrasound patient," "PET scan," and "mammogram" were reviewed to identify educational patient videos created by health organizations. Sixty-three included videos were viewed and assessed for a range of features.

Results: Average views per video were highest for MRI (293,362) and mammography (151,664). Twenty-seven percent of videos used a nontraditional format (eg, animation, song, humor). All videos (100.0%) depicted a patient undergoing the examination, 84.1% a technologist, and 20.6% a radiologist; 69.8% mentioned examination lengths, 65.1% potential pain/discomfort, 41.3% potential radiation, 36.5% a radiology report/results, 27.0% the radiologist's role in interpretation, and 13.3% laboratory work. For CT, 68.8% mentioned intravenous contrast and 37.5% mentioned contrast safety. For MRI, 93.8% mentioned claustrophobia, 87.5% noise, 75.0% need to sit still, 68.8% metal safety, 50.0% intravenous contrast, and 0.0% contrast safety. For ultrasound, 85.7% mentioned use of gel. For PET, 92.3% mentioned radiotracer injection, 61.5% fasting, and 46.2% diabetic precautions. For mammography, unrobing, avoiding deodorant, and possible additional images were all mentioned by 63.6%; dense breasts were mentioned by 0.0%.

Conclusions: Educational patient videos on YouTube regarding common imaging examinations received high public interest and may provide a valuable patient resource. Videos most consistently provided information detailing the examination experience and less consistently provided safety information or described the presence and role of the radiologist.

Key Words: Social media, YouTube, patient education, patient experience, radiology practice

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INTRODUCTION

Nearly 90% of patients search online for information regarding their health care [1], with such online information strongly influencing patient behavior [2]. A major component of available online health care resources is web-based video sharing. YouTube, the primary such service, has over one billion reported users [3]. Educational patient videos available on YouTube address a broad spectrum of medical conditions, including seizures [4], inflammatory bowel disease [5], and cancer [6], as well as various procedures or interventions [7-9]. Such health care videos tend to be popular, with reported high viewing statistics [7,10]. However, the quality of such videos is inconsistent across topics. Although the available videos in some contexts may provide accurate content and be deemed of reasonable quality [7], those in other contexts have been considered poor or mixed [8,11,12], with deficiencies or gaps in relevant medical content [5,10,13]. Formal investigation of such issues can be useful for enhancing physicians' awareness of the online information that is commonly viewed by their patients and influences their patients' decisions.

Social media platforms such as YouTube provide a valuable means of communication for radiology practices, with one investigation reporting that 76% of private radiology groups maintain at least one social

Department of Radiology, NYU School of Medicine, NYU Langone Medical Center, New York, New York.

Corresponding author and reprints: Andrew B. Rosenkrantz, MD, MPA, Department of Radiology, Center for Biomedical Imaging, NYU School of Medicine, NYU Langone Medical Center, 660 First Avenue, 3rd Floor, New York, NY 10016; e-mail: Andrew.Rosenkrantz@nyumc.org.

media account [14]. One key role of social media for radiology practices is to educate patients scheduled to undergo imaging examinations. Because a given imaging test involves a discrete encounter that generally follows a consistent protocol, the experience lends itself naturally to video-based education. Online video sharing, rather than traditional static web pages, can be particularly helpful by depicting the examination process in real time, including interactions with the radiologist and office staff, as well as maneuvers related to the imaging equipment. By visually guiding the patient through the process of the imaging examination step by step, the video may provide a more engaging and effective learning mechanism. Therefore, our aim in the present study is to assess the content of currently available YouTube videos seeking to educate patients regarding commonly performed imaging examinations.

METHODS

YouTube was initially searched in an exploratory fashion for various terms describing common imaging examinations to identify specific phrases generating results most relevant to the given examinations. Based on this process, the following five search terms were selected for identification of videos: "CT scan," "MRI," "ultrasound patient," "PET scan," and "mammography." The terms "CT" and "PET" largely returned videos not relevant to the given imaging modality; the term "ultrasound" largely returned videos by expectant parents of their fetus. For each of the five search terms, the first two pages of search results (each with 20 videos per page) were reviewed. Those videos created by a health care organization and providing educational content for a patient audience were selected for further analysis. Videos by patients describing their experience in undergoing an imaging examination, educational videos with an intended audience of other health care professionals (eg, a didactic video regarding MRI physics for radiology residents), and non-English videos were excluded.

The following characteristics were recorded for each video: video source (hospital, private imaging center, vendor, other for-profit health organization, or other nonprofit health organization); video length; and numbers of views, likes, dislikes, and comments. When likes, dislikes, or comments were disabled for a given video, this video was excluded from the summary statistics for that given characteristic. The videos were then viewed in their entirety and scored in terms of the presence or absence of numerous items relating to the video's content; this process was performed in consensus with a faculty radiologist and radiology resident. These encompassed items evaluated for all five of the included imaging examinations, as well as additional items specific for the individual examinations. The observations were summarized in descriptive fashion.

RESULTS

The final sample of educational patient videos on YouTube included 16 for MRI, 16 for CT, 13 for PET, 11 for mammography, and 7 for ultrasound. The average video length varied from 3.0 minutes for mammography to 6.7 minutes for PET. The average number of views per video was most for MRI (293,362) and mammography (151,664) and least for ultrasound (962). Likewise, the average number of likes per video was most for MRI (289) and mammography (86) and least for ultrasound (3). Table 1 provides additional information regarding the videos' average usage statistics.

The video source was a hospital in 52.4%, private radiology center in 19.0%, other nonprofit health organization in 17.5%, vendor in 7.9%, and other for-profit health organization in 3.2% of cases. Of the total sample, 28.6% of videos addressed a pediatric audience; 23.8% addressed a specific organ, pathology, or procedure; and 3.2% addressed an audience with disabilities. More than

Table 1. Number of included educational patient videos, average video length, and average usage statistics, stratified by modality (ranked in order of decreasing number of average views)

Modality	n	Length (min)	Views	Likes	Dislikes	Comments
MRI	16	4.2	293,362	289	58	102
Mammogram	11	3.0	151,664	86	22	10
CT	16	3.6	50,406	60	9	8
PET	13	6.7	32,582	43	3	5
Ultrasound	7	4.3	962	3	1	0