



Does YouTube provide high quality information? Assessment of secukinumab videos

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Abstract

The Internet is a widely used source for obtaining health-related information. With the widespread use of the Internet, access to information has become easier. YouTube is one of the major sources for health-related videos globally. YouTube provides a wide range of health-related information, but there are doubts about its quality and reliability. Therefore, we aimed to assess the quality of the most viewed secukinumab videos on YouTube. This is a descriptive study. A total of 180 secukinumab videos returned by the YouTube search engine (<http://www.youtube.com>) in response to a keywords query were evaluated in the study. The Global Quality Scale (GQS) was used to assess educational quality, and three groups were created: high quality, intermediate quality, and low quality. Video parameters were compared among the quality groups. After applying the exclusion criteria, 53 videos were analyzed; 18 (34%) videos were in the high-quality group, 17 (32%) were in the intermediate-quality group, and 18 (34%) were in the low-quality group. No significant difference was detected in terms of the number of views, likes, dislikes, and comments per day between the groups ($p > 0.05$). YouTube has a mixed structure of high, intermediate, and low-quality videos. The number of views, likes, dislikes, and comments per day should not be accepted as an indicator of quality for YouTube videos. In addition, patients should consider the importance of sources when obtaining online health-related information.

Keywords YouTube · Secukinumab · Ankylosing spondylitis · Psoriatic arthritis

Introduction

Secukinumab, which selectively inhibits interleukin (IL)-17A, has a completely human monoclonal antibody structure [1]. Secukinumab has been found to be beneficial in psoriasis, psoriatic arthritis (PSA), and ankylosing spondylitis (AS) [2, 3]. Patients with psoriasis, PSA, and AS can receive biologic disease-modifying anti-rheumatic drugs (bDMARDs) if they have high disease activity despite having taken first-line treatment choices. The potential adverse

effects and higher costs of the bDMARDs may lead patients to refer to the Internet to obtain information.

People's access to information has become easier with the widespread use of the Internet all over the world. Thanks to the broad information network of the Internet, people can easily access information about various diseases, drugs, and surgical procedures. Approximately half of the adult population uses the Internet to gain health-related information [4]. YouTube, one of the largest and most popular video-sharing sites on the Internet, has over 30 million active consumers per day. In addition, 95% of active Internet users prefer to share or watch videos on YouTube [5]. YouTube allows unregistered users to access a large and rich video content and also permits registered users to upload an unlimited number of videos. YouTube users can comment on videos and click 'like' or 'dislike' options.

The main problem in obtaining information on YouTube is that the quality and accuracy of information are not checked. Therefore, we aimed to evaluate the quality of YouTube videos on secukinumab. In addition, we aimed to analyze the sources in terms of video quality. The last aim

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of this study was to compare the number of views, likes, dislikes, and comments per day between the high-, intermediate-, and low-quality groups.

Methods

This is a descriptive study. A video search on YouTube (<http://www.youtube.com>) was conducted on February 2nd, 2019, using the keywords *secukinumab ankylosing spondylitis*, *secukinumab psoriatic arthritis*, and *secukinumab rheumatology*. Videos were listed according to the number of views for each keyword and only English-language videos were evaluated. Two different researchers evaluated videos on the first three pages (20 videos per page and 60 videos in total) for each keyword. A significant proportion of users have been shown to watch videos from only the first three pages, and a similar methodology has been used in the previous studies related to YouTube videos [6–8]. A total of 180 videos were independently assessed by two researchers (BFK, MSA). Off-topic videos, videos in a language other than English, videos with sound or visual quality problems, and repetitive videos were excluded from this study. After applying the exclusion criteria, a total of 53 videos were included in this study.

Assessment of quality

Video content including mechanism of action, indications, clinical efficacy, safety, dosage regimen, method of administration, interactions, contraindications, adverse effects, cautions, and quality of life/patient-reported outcomes were reviewed. The videos were evaluated by the researchers in terms of the following questions: is secukinumab explained in all aspects? Is the information presented in a scientific manner and with appropriate references? Is the most relevant information covered? Is the information balanced

and objective? Is the information accurate and useful for patients? Is the information current? The mentioned video contents and questions were taken into consideration and the educational quality of the videos was scored by two independent researchers (BFK and MSA) using the Global Quality Scale (GQS). The GQS was created by Bernard et al. [9] for Internet-based sources. The GQS includes a five-point scoring system. The lowest score is 1 and the highest score is 5 (Table 1). Videos rated with scores of 4 or 5 point were considered as high quality, 3 points was considered intermediate quality, and scores of 1 or 2 points were considered as low-quality [8]. If there was a conflict between the two researchers in terms of scoring, a third independent researcher (TTK) evaluated, and finalized the video.

Assessment of reliability

The modified DISCERN tool was used to assess reliability. Using this tool, the clarity and comprehensibility, references and additional sources in videos, bias, and objectivity are evaluated through five questions. The modified DISCERN tool includes yes–no questions. Each yes is scored as one point and each no is scored as 0 points. Thus, the maximum score of this tool is 5 points [7, 10] (Table 2).

Video parameters

The duration of the videos in seconds and the number of days from the date of upload to the date of evaluation were recorded. In addition, the numbers of views, likes, dislikes, and comments for per day were calculated and recorded.

Video sources

Videos were categorized into nine groups in terms of sources: pharmacist, physician, health-related website, academic, patient, independent user, society/professional

Table 1 Global Quality Scale

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1. Poor quality, poor flow, most information missing, not helpful for patients
 2. Generally poor, some information given but of limited use to patients
 3. Moderate quality, some important information is adequately discussed
 4. Good quality good flow, most relevant information is covered, useful for patients
 5. Excellent quality and excellent flow, very useful for patients
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Table 2 Modified DISCERN reliability tool

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1. Is the video clear, concise, and understandable?
 2. Are valid sources cited? (from valid studies, physiatrists or rheumatologists)
 3. Is the information provided balanced and unbiased?
 4. Are additional sources of information listed for patient reference?
 5. Does the video address areas of controversy/uncertainty?
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Table 3 General features of the videos

Video features	Median (min–max)
Duration (seconds)	327 (60–3948)
Number of views	3046 (176–160,558)
Number of likes	20 (1–1000)
Number of dislikes	1 (0–58)
Number of comments	9 (0–117)

organization, pharmaceutical company, and other health-care personnel.

Statistical analysis

The statistical analysis of the data was performed using the Statistical Package for the Social Sciences version 20.0 package program (SPSS Inc., Chicago, IL, USA). Data are expressed as median (minimum–maximum), number, and percentage. The distribution of the data was evaluated using the Shapiro–Wilk test. The comparison of parameters between the low-quality, intermediate-, and high-quality groups was performed using the Kruskal–Wallis test. The kappa coefficient was used to determine the consensus of the two independent researchers. The significance value was accepted as 0.05.

Results

Of the total 180 videos, 68 off-topic videos, 54 repetitive videos, 4 videos in a language other than English, and 1 video with sound or visual quality problems were excluded from the study. After applying the exclusion criteria, 53 videos were included in the analysis. The descriptive data of the videos are demonstrated in Table 3. In addition, we present the parameters of the videos in each of the sources (Table 4).

When we analyzed the video quality according to the GQS scores, 18 videos (34%) were in the high-quality group, 17 (32%) were in the intermediate-quality group, and 18 (34%) were in the low-quality group. When the video sources were evaluated according to quality, 100% ($n=4$) of the videos in the high-quality group were sourced from academics, 60% ($n=3$) were from physicians, and 50% ($n=2$) were from pharmaceutical companies. In the low-quality group, 66.7% ($n=2$) of the videos were sourced from independent users, 42.9% ($n=3$) were from health-related websites, and 40% ($n=12$) were from patients (Table 5). In low- and intermediate-quality videos sourced from independent users and patients, personal experiences were presented without appropriate references or additional sources. Videos were not clear and understandable. The information presented in the videos was not balanced. Videos had poor flow and were not useful for patients. Some of the low- and intermediate-quality videos sourced from health-related websites prioritized a commercial concern. The videos provided some information, but they had limited use for patients. Information was

Table 4 Parameters of the videos according to the sources

Source	Duration* (seconds)	Number of views*	Number of likes*	Number of dislikes*	Number of comments*
Physician	607 (184–3948)	11,292 (512–30,603)	66 (3–196)	3 (0–15)	15 (3–24)
Health-related website	212 (90–574)	22,220 (1361–123,211)	134.5 (5–1000)	30.5 (2–47)	21 (2–95)
Academic	465.5 (169–1679)	8963 (2129–160,558)	37.5 (17–931)	1 (0–58)	15 (1–117)
Pharmaceutical company	179.5 (60–323)	6745.5 (1620–9343)	22 (14–70)	5 (1–13)	2 (0–61)
Patient	424.5 (112–742)	894.5 (176–31,500)	16 (2–131)	1 (0–17)	8.5 (0–116)
Independent user	78 (60–120)	3046 (1427–4716)	10 (1–13)	4 (1–5)	3 (0–4)

*All data are expressed as median (minimum–maximum)

Table 5 Categorization of the videos according to sources, n (%)

Source	Low-quality	Intermediate-quality	High-quality	Total
Physician	1 (20)	1 (20)	3 (60)	5
Health-related website	3 (42.9)	1 (14.3)	3 (42.9)	7
Academic	0 (0)	0 (0)	4 (100)	4
Pharmaceutical company	0 (0)	2 (50)	2 (50)	4
Patient	12 (40)	13 (43.3)	5 (16.7)	30
Independent user	2 (66.7)	0 (0)	1 (33.3)	3

n number, % percentage

not balanced and unbiased. Valid (from valid studies or rheumatologists) and additional sources were not listed. The videos did not address areas of controversy/uncertainty. By contrast, high-quality videos had good flow and were clear, comprehensible, and useful for patients. These videos provided the most relevant information. In high-quality videos, valid sources were cited. The information provided in the videos was balanced and unbiased.

The video parameters including the number of daily views, likes, dislikes, and comments were not significantly different between the high-, intermediate-, and low-quality groups ($p > 0.05$). The modified DISCERN tool scores were found to be significantly different between the groups ($p < 0.001$) (Table 6).

The kappa score of the study was calculated as 0.75.

Discussion

Obtaining online health-related information is becoming increasingly widespread worldwide. Therefore, social platforms and video-sharing sites are considered as an area of potential for pharmaceutical companies and healthcare professionals [11]. In the previous periods, patients were largely passive consumers and patients were completely dependent on medical information provided by physicians. On the Internet, the availability of a broad information network that healthcare consumers can easily and freely access has created important opportunities for accessing information. It has led to a change in the passive role of patients who have begun to play a more active role in the diagnosis and treatment processes. Internet users can use YouTube videos to obtain health-related information. However, use of YouTube as a source of information may cause problems. YouTube can be used as an advertising tool. Users can present their personal opinions without sufficient information and experience. Most importantly, YouTube does not have a peer review process that controls video content, quality, and accuracy. It may not always be possible for patients without medical knowledge to review and synthesize health-related information from their own perspective. This may cause the spreading of misleading, incomplete, or incorrect health-related information. For

this reason, we evaluated secukinumab videos on YouTube. In addition, we aimed to determine the use of YouTube videos in rheumatology practice.

Videos were divided into three groups according to the quality level, and 18 videos (34%) were in the high-quality group, 17 videos (32%) were in intermediate-quality group, and 18 videos (34%) were in the low-quality group. Different results have been reported in studies evaluating YouTube videos with a similar methodology. In some studies, nearly, half of the videos were found to be useful or high quality [7, 8, 12, 13]. On the other hand, some researchers reported that less than 20% of videos were useful or high quality [6, 14]. Various factors may have caused the differences in the above-mentioned research; the studies were conducted on different diseases or topics, video evaluations are subjective despite specific criteria being used in studies, there were different sample sizes, and non-English-language videos may have affected the results.

A considerable proportion of the videos were found to be uploaded by patients in this study. High-quality videos were mainly sourced from academics, physicians, and pharmaceutical companies. Independent users, health-related websites, and patients were the main sources of low-quality videos. In line with our study, Tolu et al. [7] reported that the main sources of high-quality videos were universities, professional organizations, and physicians. In addition, 79.1% of videos were sourced from patients or independent users. The main sources of useful videos were identified as universities, hospitals, and physicians in another study conducted on retinopathy of prematurity videos [15]. Videos sourced from independent users had lower quality levels as compared with videos made by healthcare professionals in this study. Erdem et al. [16] evaluated YouTube videos on kyphosis and reported that videos sourced from academics had the highest educational quality level. Our results indicate that Internet users should focus on video sources when evaluating YouTube videos for obtaining health-related information. Users should prioritize videos from academics, universities, and physicians. Universities, professional organizations, academics, and physicians should be more active on Internet platforms and should upload more videos, such that users can access high-quality, accurate information.

Table 6 Comparison of the video parameters between the low-quality, intermediate-quality, and high-quality groups

Video quality	DISCERN score ^a median (min–max)	Views per day ^b median (min–max)	Likes per day ^b median (min–max)	Dislikes per day ^b median (min–max)	Comments per day ^b median (min–max)
Low	1 (0–2)	3.43 (0.26–52.69)	0.01 (0–0.95)	0 (0–0.04)	0.01 (0–0.13)
Intermediate	2 (1–3)	3.88 (0.57–34.38)	0.03 (0–0.15)	0 (0–0.04)	0.02 (0–0.21)
High	3 (2–5)	9.52 (0.22–229.44)	0.07 (0–1.86)	0 (0–0.08)	0.01 (0–0.14)

^a $p < 0.001$, ^b $p > 0.05$

YouTube has an active structure. Internet users can comment at the bottom of the videos, communicate with each other, and show their thoughts simply by clicking ‘like’ or ‘dislike’. We obtained the numbers of views, likes, dislikes, and comments from YouTube for all videos. No significant differences were found between the quality groups in terms of the numbers of daily views, likes, dislikes, and comments. A significant difference was detected between the groups in DISCERN scores and the highest scores were found in the high-quality group. Similar to our results, some researchers found no significant differences between the quality groups in video parameters [8, 17]. Singh et al. [18] reported no significant correlations between the number of views and likes per day and content, accuracy, and comprehensiveness. On the contrary, Tolu et al. [7] and Şahin et al. [15] reported that useful videos had a significantly higher numbers of views and likes per day. We consider that the numbers of views, likes, dislikes, and comments per day are not indicative of quality on YouTube videos. In addition, all these parameters can be manipulated by Internet users and links directed to the videos on YouTube can influence these parameters. Therefore, Internet users should attribute less importance to these parameters when evaluating videos on YouTube.

This study has a number of limitations. The sample size is relatively small as a consequence of the exclusion criteria. We only evaluated videos in the English language. Although specific scales such as the GQS have been used, video quality evaluations are subjective. Videos were reviewed with a single snapshot. YouTube is a dynamic platform and its content is constantly changing. New videos can be added every second, and with that, the number of views, likes, dislikes, and comments may change.

Conclusion

Our results indicate that YouTube has both high- and low-quality video contents. At this point, it is becoming important to select videos that can provide high-quality, useful, and accurate information for users. The number of views, likes, dislikes, and comments per day is not a predictor of high-quality videos on YouTube. Users should focus on sources when reviewing videos on YouTube. We consider that the quality of health-related information gained from the Internet should be assessed and discussed by physicians and other healthcare professionals. We believe that patients should be guided by health professionals to the right sources of information on the Internet.

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Author contributions BFK and MSA designed the study; BFK and MSA reviewed the videos and provided the data; BFK analyzed the

data; MSA contributed the analysis tools; BFK and MSA authored and reviewed drafts of the paper; BFK prepared the tables; BFK and MSA made the revisions; BFK and MSA approved the final manuscript as submitted and agree to be accountable for all aspects of the work.

Compliance with ethical standards

Conflict of interest The authors declare no conflicts of interest.

Ethics statement We did not evaluate any human participants or animals in this study. Videos that anyone can access were evaluated. Therefore, there was no need for approval of the ethics committee for this study.

References

1. Mease PJ, McInnes IB, Kirkham B, Kavanaugh A, Rahman P, van der Heijde D, Landewé R, Nash P, Pricop L, Yuan J, Richards HB, Mpfu S, FUTURE 1 Study Group (2015) Secukinumab inhibition of interleukin-17A in patients with psoriatic arthritis. *N Engl J Med* 373:1329–1339. <https://doi.org/10.1056/NEJMoa1412679>
2. Langley RG, Elewski BE, Lebwohl M, Reich K, Griffiths CE, Papp K, Puig L, Nakagawa H, Spelman L, Sigurgeirsson B, Rivas E, Tsai TF, Wasel N, Tying S, Salko T, Hampele I, Notter M, Karpov A, Helou S, Papavassilis C, ERASURE Study Group; FIXTURE Study Group (2014) Secukinumab in plaque psoriasis—results of two phase 3 trials. *N Engl J Med* 371:326–338. <https://doi.org/10.1056/NEJMoa1314258>
3. Baeten D, Baraliakos X, Braun J, Sieper J, Emery P, van der Heijde D, McInnes I, van Laar JM, Landewé R, Wordsworth P, Wollenhaupt J, Kellner H, Paramarta J, Wei J, Brachet A, Bek S, Laurent D, Li Y, Wang YA, Bertolino AP, Gsteiger S, Wright AM, Hueber W (2013) Anti-interleukin-17A monoclonal antibody secukinumab in treatment of ankylosing spondylitis: a randomised, double-blind, placebo-controlled trial. *Lancet* 382:1705–1713. [https://doi.org/10.1016/S0140-6736\(13\)61134-4](https://doi.org/10.1016/S0140-6736(13)61134-4)
4. Amante DJ, Hogan TP, Pagoto SL, English TM, Lapane KL (2015) Access to care and use of the Internet to search for health information: results from the US National Health Interview Survey. *J Med Internet Res* 17(4):e106. <https://doi.org/10.2196/jmir.4126>
5. Gokcen HB, Gumussuyu G (2019) A quality analysis of disc herniation videos on YouTube. *World Neurosurg*. <https://doi.org/10.1016/j.wneu.2019.01.146> (Epub ahead of print)
6. Rittberg R, Dissanayake T, Katz SJ (2016) A qualitative analysis of methotrexate self-injection education videos on YouTube. *Clin Rheumatol* 35:1329–1333. <https://doi.org/10.1007/s10067-015-2910-5>
7. Tolu S, Yurdakul OV, Basaran B, Rezvani A (2018) English-language videos on YouTube as a source of information on self-administer subcutaneous anti-tumour necrosis factor agent injections. *Rheumatol Int* 38:1285–1292. <https://doi.org/10.1007/s00296-018-4047-8>
8. Kocyigit BF, Nacitarhan V, Koca TT, Berk E (2019) YouTube as a source of patient information for ankylosing spondylitis exercises. *Clin Rheumatol*. <https://doi.org/10.1007/s10067-018-04413-0> (Epub ahead of print)
9. Bernard A, Langille M, Hughes S, Rose C, Leddin D, Veldhuyzen van Zanten S (2007) A systematic review of patient inflammatory bowel disease information resources on the world wide web. *Am J Gastroenterol* 102:2070–2077

10. Charnock D, Shepperd S, Needham G, Gann R (1999) DISCERN: an instrument for judging the quality of written consumer health information on treatment choices. *J Epidemiol Community Health* 53:105–111
11. McNab C (2009) What social media offers to health professionals and citizens. *Bull World Health Organ* 87:566. <https://doi.org/10.2471/BLT.09.066712>
12. Singh AG, Singh S, Singh PP (2012) YouTube for information on rheumatoid arthritis—a wakeup call? *J Rheumatol* 39:899–903. <https://doi.org/10.3899/jrheum.11111>
13. Garg N, Venkatraman A, Pandey A, Kumar N (2015) YouTube as a source of information on dialysis: a content analysis. *Nephrology (Carlton)* 20:315–320. <https://doi.org/10.1111/nep.12397>
14. Nason GJ, Kelly P, Kelly ME, Burke MJ, Aslam A, Giri SK, Flood HD (2015) YouTube as an educational tool regarding male urethral catheterization. *Scand J Urol* 49:189–192. <https://doi.org/10.3109/21681805.2014.975837>
15. Şahin A, Şahin M, Türkcü FM (2018) YouTube as a source of information in retinopathy of prematurity. *Ir J Med Sci*. <https://doi.org/10.1007/s11845-018-1902-2> (**Epub ahead of print**)
16. Erdem MN, Karaca S (2018) Evaluating the accuracy and quality of the information in kyphosis videos shared on YouTube. *Spine (Phila Pa 1976)* 43:E1334–E1339
17. Madathil KC, Rivera-Rodriguez AJ, Greenstein JS, Gramopadhye AK (2015) Healthcare information on YouTube: a systematic review. *Health Inform J* 21:173–194. <https://doi.org/10.1177/1460458213512220>
18. Singh SK, Liu S, Capasso R, Kern RC, Gouveia CJ (2018) YouTube as a source of information for obstructive sleep apnea. *Am J Otolaryngol* 39:378–382. <https://doi.org/10.1016/j.amjoto.2018.03.024>

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