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YouTube as a Source of Information on the Impact of the COVID-19 Pandemic on Mental Health of Children

COVİD-19 Pandemisinin Çocukların Ruh Sağlığı Üzerindeki Etkisi Hakkında Bilgi Kaynağı Olarak YouTube

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ABSTRACT

Objectives: World Health Organization has announced that the coronavirus disease-2019 (COVID-19) outbreak is a pandemic that causes worry and panic in anyone who is exposed to the virus's actual or imagined threat. Our lifestyles and life patterns have radically changed, and the impact of the COVID-19 epidemic has pervaded all areas of our daily lives. The aim of this research was to evaluate the quality of the most popular YouTube™ videos about the effects of COVID-19 infection/pandemic status on children and adolescents.

Materials and Methods: DISCERN tool and the Global Quality Scale were used to the reliability and quality of videos, respectively. The quality of the videos is classified into three groups as "poor quality", "moderate quality" and "good/ excellent quality".

Results: A total of 112 videos were included in the study and these videos were evaluated by the researchers. Of the videos, 31.3% (n=35) were of good/excellent quality, 32.1% (n=36) were moderate, and 36.6% (n=41) were of poor quality. It was determined that the reliability of the good/excellent quality videos was statistically significantly higher than the moderate and poor-quality videos ($p<0.001$).

Conclusion: Although YouTube™ contains important health data, some of this information is false and consists of low-quality videos. Mental health professionals should direct patients to the correct internet information resources.

Keywords: Coronavirus, social media, anxiety, outbreak, child psychiatry, SARS-CoV-2

ÖZ

Amaç: Dünya Sağlık Örgütü, koronavirüs hastalığı-2019 (COVİD-19) salgınının, virüsün gerçek veya hayali tehdidine maruz kalan herkeste endişe ve paniğe neden olan küresel bir salgın olduğunu duyurdu. Yaşam tarzlarımız ve yaşam kalıplarımız kökten değişti ve COVİD-19 salgınının etkisi günlük hayatımızın birçok alanına yayıldı. Bu araştırmanın amacı, COVİD-19 enfeksiyonu/pandemi durumunun çocuklar ve ergenler üzerindeki etkileri hakkında en popüler YouTube videolarının kalitesini değerlendirmektir.

Gereç ve Yöntem: Videoların güvenilirliği ve kalitesi, sırasıyla DISCERN aracı ve Global Kalite Ölçeği kullanılarak değerlendirildi. Videoların kalitesi "düşük kalite", "orta kalite" ve "iyi/mükemmel kalite" olarak üç gruba ayrılmıştır.

Bulgular: Çalışmaya toplam 112 video dahil edilmiş ve bu videolar araştırmacılar tarafından değerlendirilmiştir. Videoların %31,3'ü (n=35) iyi/mükemmel kalitede, %32,1'i (n=36) orta ve %36,6'sı (n=41) düşük kalitede idi. İyi/mükemmel kalitedeki videoların düşük ve orta kalitedeki videolara göre daha güvenilir olduğu saptanmıştır ($p<0,001$).

Sonuç: YouTube™ önemli sağlık verileri içerse de bu bilgilerin bir kısmı yanıltıcıdır ve düşük kaliteli videolardan oluşmaktadır. Ruh sağlığı profesyonelleri hastaları doğru internet bilgi kaynaklarına yönlendirmelidir.

Anahtar Kelimeler: Koronavirüs, sosyal medya, kaygı, salgın, çocuk psikiyatrisi, SARS-CoV-2

Introduction

The coronavirus disease-2019 (COVID-19) pandemic has spread rapidly in the late January 2020 and has attracted worldwide attention. COVID-19 was known as "2019 new coronavirus pneumonia" arose from a marketplace in Wuhan city of China in December 2019.[1] The coronavirus was declared a global health emergency by the World Health Organization (WHO) in January 2020.[2] As there is not currently approved treatment for this infection, prevention is critical. The first step in treatment is to provide adequate isolation for other contacts, patients and healthcare professionals to prevent contamination.[3] WHO has

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announced that the COVID-19 outbreak is a pandemic that causes worry and panic in anyone who is exposed to the virus's actual or imagined threat. Our lifestyles and life patterns have radically changed, and the impact of the COVID-19 epidemic has pervaded every part of our everyday lives. Limited information and distressing news about COVID-19 can trigger fear and anxiety in the public.[4,5]

An increased likelihood of social loneliness and isolation, which is closely linked to suicide attempts, self-harm, depression, and anxiety throughout life, is a key negative result of the COVID-19 outbreak.[6,7] In this fast changing situation, the epidemic has fully taken over the media and social media, exposing both adults and children in their environment to huge volumes of information as well as notable levels of worry and anxiety. Simultaneously, children face challenging events such as changes in their daily routine and social life.[8] Because of the unusual mix of economic hardship, social isolation, and public health crisis, the COVID-19 outbreak led to a rise in diagnosed de novo cases as well as increasing the severity of psychiatric problems already present among children and adolescents.[9] Children require truthful information regarding family transitions. When children are not given enough information, they try understanding the existing situation on their own.[10] Children may be concerned about the emotional conditions of adults around them if there are no emotional dialogues. This worry may cause youngsters to unwittingly avoid communicating their own worries to protect others, leaving them to struggle with painful feelings alone.[11]

It may lead parents and mental health professionals working with children to use the internet to search information on models of explaining the situation of the pandemic and the quarantine to children, anxiety symptoms that may be experienced by the children and adolescents during the pandemic, changes in sleep, appetite, behavior and mental problems among youth during this stressful period along with beneficial activities/practices thay may help them cope with pandemic-related stress. Thanks to the increase in the use and access of the Internet worldwide, it is easier for people to access this information. People may quickly get information on numerous ailments or mental disorders, treatments, and surgical procedures because of the Internet's enormous information network. YouTube™, unlike conventional media, allows people to participate in creating and consuming streaming videos as well as form private channels and user groups.[12] With more than 2 billion daily views and access by 95% of internet users, YouTube™ is the world's most popular video viewing and sharing site.[13] YouTube™ has two main functions for its users (content search & creation). Content search is a simple user activity that provides users to exploration and look for specific videos that meet their needs. Users share their video material with particular persons and groups or share it in general while generating content.[14] According to the 2018 Health Information National Trends Survey, more than a third of patients view health-related videos on YouTube™.[15] The previously published research has investigated the reliability and accuracy of online YouTube™ videos of medical and mental disorders such as rheumatic disease[16], orthognathic surgery[17], attention deficit hyperactivity disorder[18], suicide in young people.[19] YouTube™ can be a tool to educate patients/society/parents or an important and accessible information source about the health problems of patients. Notwithstanding, there are some questions regarding the validity, content, and quality of its videos. It is difficult to control the accuracy, information quality, availability and content of uploaded videos. There is no study on the content of the videos about the impact of the COVID-19 epidemic on the mental state of children and adolescents and protecting the children and adolescents during the epidemic. This research aims to evaluate the quality of the most popular YouTube™ videos about the effects of COVID-19 infection/pandemic status on children and adolescents, and the flow, validity and quality of the information they contain about the protection of the mental health of adolescents and children in the event of a pandemic. The study's secondary aim was to compare the number of daily comments, dislikes, likes, and views in the groups of high, moderate, and poor-quality.

Materials and Methods

Video Selection

This study has been realized as a descriptive study. To search for videos on May 1 on YouTube™ (www.youtube.com) "pandemic children", "COVID 19 children", "coronavirus mental health", "coronavirus child anxiety", "COVID 19 mental health", "pandemic child anxiety", "COVID 19 child anxiety" and "pandemic mental health" keywords were used. The inclusion criteria for videos were content being in English, content primarily related to COVID-19 and child mental health; and acceptable audio-visual quality. First, the search history from the computer and internet was deleted, all accounts were closed. Each keyword was listed by view count and the first three pages of videos (60 videos) were evaluated. The scanned videos were evaluated and watched separately by two child psychiatrists. The rationale for choosing the 60 most viewed videos is that they contain the first three page search results on the site and to show that 95.0% of people who search online watch videos on the first three pages of the output.[17] As a result, we reasoned that examining the first 3 pages can include the vast majority of YouTube™ viewers. Therefore, the most popular films were displayed first, and two researchers analyzed 540 videos. Irrelevant videos (other diseases, videos with adult mental health content), repeated videos, videos other than those in English language, and non-audio videos with inappropriate sounds were excluded from the study.

Assessment of Quality

The researchers assessed the videos by asking the following questions: "Has the coronavirus/pandemic/quarantine been addressed in all its aspects?", "Is the information provided with pertinent references?", "Is the information given scientifically explained?", "Does it contain the most relevant data on the subject?", "Are up to date sources of information used?", "Is the information provided useful and accurate for parents, children and patients?"

The informative value of YouTube™ videos was evaluated and scored separately by two independent researchers (M.Ö, Y.Ö) in the study. The quality of the watched videos was scored by each researcher according to the Global Quality Scale (GQS). The likert-type scale of GQS is developed to evaluate internet-based health resources. This scale is scored from 1 point to 5 points. This scale is used by researchers to assess the quality, usability, and flow of films. A video with a score of 5 or 4 points is accepted as high/excellent quality, whereas a score of 3 points is accepted as moderate quality and a score of 2 points or 1 point is accepted as low quality (Table 1).[20] When there was a disagreement between the two researchers' film ratings, a third independent researcher reviewed and ended the evaluation of the video (Ş.Y.S.).

Evaluation of Reliability

The modified DISCERN tool (DS) was used to evaluate the reliability of YouTube™ videos. Charnock et al.[21] developed this instrument. Each question is answered as yes/no and 1 point is given for the affirmative answer. The highest total score that can be obtained from the scale is five points (Table 2).

Video Parameters

The length of each video, the number of comments, the upload date, the number of likes and dislikes, the length of each video, the number of days uploaded, the number of views, the person speaking on the video, and the content of the video were noted. The total number of comments, dislikes, likes, and views were divided by the total number of days on YouTube™. Consequently, daily average values were found. The rating of likes was calculated using total likes/(total likes + total dislikes).

Sources of Videos

The videos' sources were divided into 5 categories: 1) doctor (psychiatrist, pediatrician), 2) psychologist, 3) other mental health counselors (psychiatric nurse, social worker, school counselor), 4) health-related websites or webinars, 5) others (independent users, parents, endustry-sponsored websites, tv programmes).

Table 1. Global Quality Scale[20]

1. Poor quality, poor flow, most information missing, unhelpful for patients
2. Generally, poor, some information is given but is 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

Table 2. Modified DISCERN reliability tool[21]

1. Is the video clear, concise, and understandable?
2. Are valid sources cited? (from valid studies, psychiatrists, or psychologists)
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?

Ethics Statement

The study was not conducted on any human or animal. The videos that all users can watch were included and analyzed in the study. Therefore, no need for an ethics committee application and no application was made to any ethics committee. When the existing published studies were examined by the authors, it was determined that the approval of the ethics committee was not obtained in similar studies.[18,22]

Statistical Analysis

SPSS version-21 (IBM Corp, Armonk, NY) was used for statistical analysis of data from this study. Median [minimum (min)-maximum (max)], number and percentage were used to express descriptive data. The comparison and analysis of categorical variables were made with the chi-square test. The Kruskal-Wallis test was used to compare more than two continuous variables. Whether the data were normally distributed or not was evaluated by the Shapiro-Wilk test. The degree of agreement between researchers (M.Ö, Y.Ö.) was assessed using Cohen's Kappa coefficient (κ). A κ above 0.8 was considered "excellent", between 0.6 and 0.8 as "significant", between 0.4 and 0.6 as "moderate", and less than 0.4 as "poor".[23] A p-value less than 0.05 was considered statistically significant in the study.

Results

Three hundred thirty-five videos out of 540 were found to be off-topic, 64 were repeated videos, 23 were not in English, and 6 were incomprehensible (audio or visual problems); so they were excluded. The remaining 112 videos were watched one by one by the researchers.

The median duration of the videos was 389.5 seconds (min:36-max:3,930). The median view count and comments were 9,836 (min:832-max:689,264) and 8 (min:0-max:1,016), respectively. The detailed features of evaluated videos are shown in Table 3.

According to GQS, 36.6% (n=41) of the analyzed videos were of poor quality, 32.1% (n=36) were moderate, and 31.3% (n=35) were of high quality. The quality of most videos whose video sources were doctors and health-related websites was of high

Table 3. General features of videos

Video features	Median (minimum-maximum)
Duration (seconds)	389.5 (36-3,930)
View count	9,836 (832-689,264)
Number of comments	8 (0-1,016)
Total likes	120 (0-5,144)
Total dislikes	0 (0-1,104)
Upload days	156 (32-260)
Like ratio	1 (0.6-1)

quality; the quality of most videos related to other mental health workers and TV programs, independent users, websites was of low quality. The kappa score, which indicates the agreement between the researchers, was found to be 0.76. It was determined that 61.5% (n=8) of the videos uploaded by medical doctors were of good/excellent quality. It was determined that 66.7% (n=10) videos produced by health-related websites were of good/excellent. The quality of the videos whose video sources were psychologists was mostly moderate (37.1%) or high quality (37.1%) (Table 4).

There were significant differences in median DS (p<0.001) and GQS (p<0.001) according to the video sources. The highest median GQS was taken from videos uploaded by medical doctors (median value 4, min:2 and max:5) and health-related websites (median value 4). Videos with the highest DS value were those whose sources were the health-related websites (median value 4) and medical doctors, respectively (Table 5).

There were no significant differences in median comments per day (p=0.737), views per day (p=0.672) and like ratios (p=0.778) according to video quality. The median DS of good/excellent videos was substantially greater than that of moderate and poor-quality videos (p<0.001).

Discussion

Social media can bridge the gap in health literacy by presenting information in novel ways that even illiterate people can understand.[24] People may readily obtain information about various ailments, medications, and surgical procedures owing to the Internet's extensive information network.[25] However, this increasing source also poses a risk for spreading of false or even damaging knowledge. Doctors and researchers have noticed the increasing impact of social media on the patient's information and adherence to treatment, as evidenced by a recent increase in published studies on the video reliability of the medical media.[24] Nevertheless, using YouTube™ as a source of evidence-based medical information may be problematic. YouTube™ may also be used to promote products. Users with insufficient knowledge and expertise might express their personal thoughts. Above all, it lacks a filter or review mechanism for determining the appropriateness, quality, and veracity of video content. Patients without medical expertise may not be able to acquire excellent and trustworthy health-related information only through YouTube™. This may lead to the dissemination of inaccurate, incomplete, or misleading information and even to disruption of the treatment and diagnostic process. For these reasons, we have examined YouTube™ videos about how the pandemic process should be explained to children, how it can affect children, the effect of the pandemic on child mental health, and what should be done to relieve children's anxiety in this process.

The videos in this study were divided into three categories, as in previous studies, and the quality of the videos was analyzed by the researchers. Thirty five (31.3%) videos formed the group of high-quality, 36 (32.1%) videos formed the group of moderate quality and 41 (36.6%) videos formed the group of low-quality. Although there have been similar studies on medical information by other researchers, there are differences between the results of the studies. In a study by Kocyigit and Akaltun[26] on sekukinumab videos, it was reported that 18 (34.0%) of the videos were of high quality, 17 (32.0%) of medium quality, and 18 (34.0%) of low quality. In a study examining 159 YouTube™ videos about attention deficit hyperactivity disorder, 32.70% videos were grouped as useful/

Table 4. Categorization of the videos according to sources, n (%)

Source	Poor quality	Moderate quality	Good/Excellent quality	Total
Medical doctor	2 (15.4)	3 (23.1)	8 (61.5)	13
Psychologist	9 (25.8)	13 (37.1)	13 (37.1)	35
Other mental health workers	7 (53.8)	6 (46.2)	0 (0)	13
Health-related website	1 (6.7)	4 (26.6)	10 (66.7)	15
Others	22 (61.1)	10 (27.8)	4 (11.1)	36

n: Number, %: Percentage

Table 5. GQS, DS, views per day, comments per day, and like ratio of videos according to video source

Video source	GQS[a] Median (min-max)	DS[b] Median (min-max)	Views per day[c] Median (min-max)	Comments per day[d] Median (min-max)	Like ratio[e] Median (min-max)
Medical doctor	4 (2-5)	3 (2-4)	7864 (936-117512)	0.24 (0-5.76)	1 (0.82-1)
Psychologist	3 (2-5)	3 (1-5)	11280 (864-602016)	0.06 (0-27.5)	1 (0.6-1)
Other mental health workers	3 (1-3)	2 (0-3)	198.88 (43.04-2552.64)	0.04 (0-2)	1 (0.94-1)
Health-related website	4 (2-5)	4 (2-5)	12872 (1072-300952)	0 (0-4.88)	0.98 (0.73-1)
Others	1.5 (1-4)	2 (0-5)	8156 (832-689264)	0.04 (0-5.54)	0.96 (0.61-1)

[a]p<0.0001, [b]p<0.0001, [c]p=0.699, [d]p=0.299, [e]p=0.229
GQS: Global Quality Scale, DS: Modified DISCERN Tool, min: minimum, max: maximum

very useful, 28.93% videos as useful and 38.36% videos as misleading.[27] D'Souza et al.[28], Singh et al.[29], and Garg et al.[30] stated that the most high-quality or useful video rates in their study were 69.9%, 54.9%, and 58.3% respectively. These differences may have been the result of the studies conducted on different diseases or subjects, the different inclusion-exclusion criteria used in the studies, and subjectivity in video evaluations despite the scales. The sample sizes in the studies were different and the video language (non-English videos) could have influenced the findings.

Additionally, we divided the videos in our study into 5 groups as video uploaders-sources. Of the videos, 13 (11.6%) were uploaded by medical doctors, 35 (31.3%) by psychologists, 13 (11.6%) by other mental health professionals, 15 (13.4%) by health-related websites, 36 (32.1%) by other users. It was determined that the videos whose video sources were medical physicians and health-related websites were in the group of high quality, and videos whose video sources were psychologists were of moderate and high quality. It was found that the videos uploaded by other users were mostly of poor quality. There was a statistically significant difference between the video sources according to the GQS and DISCERN scores. Tolu et al.[31], reported that 10.6% of 142 video sources belong to universities/medical doctors/professional organizations, 79.6% individuals/patients and the main source of 62.5% of high-quality videos belong to professional organizations/medical institutions/universities and 97.0% of low-quality videos belong to individuals/patients. Studies conducted in accordance with our study reported that high-quality videos were provided by medical doctors, universities, and health-related websites, and low-quality videos were provided by independent users, commercial websites, and individuals.[32,33] Considering the results of other health-related studies the present study, internet users should take video sources into account while watching videos to get a more accurate information about child mental health and health in general during the pandemic process. Viewers should prefer videos of medical doctors, academics, and health-related websites. Academicians, medical doctors, psychologists and health-related websites should be more active and more videos of their should be uploaded so that visitors can get accurate and high-quality information.

YouTube™ is a dynamic platform. Internet users can express their opinions on the video by clicking the "like", "don't like" buttons and by "commenting". When we watched the videos we examined for our study, we saw that many internet users expressed their opinions in these ways. We also found that high DS scores were in the high-quality video group. Studies have shown that the DS of high-quality videos are higher than low-quality videos and that there is a relationship between quality level and DS scores.[22,34] There was no statistically significant difference in terms of video quality levels, daily views, the number of comments and ratings of likes. Some research did not discover any significant relationship between the video quality levels they examined and these parameters, similar to our findings.[22,35,36]

Study Limitations

New content is added to YouTube™ all the time, and these content is constantly commented, watched, or deleted. Therefore, results may change over time. Although many key terms are used in the subject, not all videos are included in the study. Since only English-language narrative videos were included and the reliability and quality of the content of the videos narrated in other languages were not analyzed. The scales have been evaluated subjectively despite the use of specific scales such as GQS and DS. Also, our results may be valid only for YouTube™ and may not be valid for other video-based social media platforms such as TikTok™ or Instagram™.

Conclusion

We think that the quality of YouTube™ videos is not determined by the number of daily comments, dislikes, likes, or views. We also believe that all of these characteristics may be modified by internet users, and that linking to videos may impact them. Authors believe that while selecting to view and evaluate videos on YouTube™, Internet users should pay less attention to these metrics.

Ethics

Ethics Committee Approval: This study does not require an ethics committee.

Informed Consent: This study does not require patient consent.

Authorship Contributions

Concept: M.Ö., Y.Ö., Design: M.Ö., Y.Ö., H.K., Data Collection or Processing: M.Ö., Y.Ö., Ş.Y.S., Analysis or Interpretation: Ş.Y.S., H.K., Literature Search: M.Ö., Y.Ö., Writing: M.Ö., Y.Ö.

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References

1. Lu H, Stratton CW, Tang YW. Outbreak of pneumonia of unknown etiology in Wuhan, China: The mystery and the miracle. J Med Virol. 2020;92:401-402.
2. Li W, Yang Y, Liu ZH, Zhao YJ, Zhang Q, Zhang L, Cheung T, Xiang YT. Progression of mental health services during the COVID-19 outbreak in China. Int J Biol Sci. 2020;16:1732-1738.
3. Singhal T. A review of coronavirus disease-2019 (COVID-19). Indian J Pediatr. 2020;87:281-286.
4. Shigemura J, Ursano RJ, Morganstein JC, Kurosawa M, Benedek DM. Public responses to the novel 2019 coronavirus (2019-nCoV) in Japan: mental health consequences and target populations. Psychiatry Clin Neurosci. 2020;74:281-282.
5. Bao Y, Sun Y, Meng S, Shi J, Lu L. 2019-nCoV epidemic: address mental health care to empower society. Lancet. 2020;395:e37-38.
6. Elovainio M, Hakulinen C, Pulkki-Råback L, Virtanen M, Josefsson K, Jokela M, Vahtera J, Kivimäki M. Contribution of risk factors to excess mortality in isolated and lonely individuals: an analysis of data from the UK Biobank cohort study. Lancet Public Health. 2017;2:e260-266.

7. Matthews T, Danese A, Caspi A, Fisher HL, Goldman-Mellor S, Kepa A, Moffitt TE, Odgers CL, Arseneault L. Lonely young adults in modern Britain: findings from an epidemiological cohort study. Psychol Med. 2019;49:268-277.
8. Danese A, Smith P, Chitsabesan P, Dubicka B. Child and adolescent mental health amidst emergencies and disasters. Br J Psychiatry. 2020;216:159-162.
9. Golberstein E, Gonzales G, Meara E. How do economic downturns affect the mental health of children? Evidence from the National Health Interview Survey. Health Econ. 2019;28:955-970.
10. Christ GH, Christ AE. Current approaches to helping children cope with a parent's terminal illness. CA Cancer J Clin. 2006;56:197-212.
11. Dalton L, Rapa E, Ziebland S, Rochat T, Kelly B, Hanington L, Bland R, Yousafzai A, Stein A; Communication Expert Group. Communication with children and adolescents about the diagnosis of a life-threatening condition in their parent. Lancet. 2019;393:1164-1176.
12. Gill P, Arlitt M, Li Z, Mahanti A. Youtube traffic characterization: a view from the edge. Proceedings of the 7th ACM SIGCOMM conference on Internet measurement. Available from: http://web.cs.wpi.edu/~claypool/courses/529-F10/papers/measure/gill-youtube-07.pdf
13. Madathil KC, Rivera-Rodriguez AJ, Greenstein JS, Gramopadhye AK. Healthcare information on YouTube: a systematic review. Health Informatics J. 2015;21:173-194.
14. Boyd DM, Ellison NB. Social network sites: Definition, history, and scholarship. J Comput Mediat Commun. 2007;13:210-230.
15. Langford A, Loeb S. Perceived patient-provider communication quality and sociodemographic factors associated with watching health-related videos on YouTube: a cross-sectional analysis. J Med Internet Res. 2019;21:e13512.
16. Kocyigit BF, Akaltun MS, Sahin AR. YouTube as a source of information on COVID-19 and rheumatic disease link. Clin Rheumatol. 2020;39:2049-2054.
17. Hegarty E, Campbell C, Grammatopoulos E, DiBiase AT, Sherriff M, Cobourne MT. YouTube™ as an information resource for orthognathic surgery. J Orthod. 2017;44:90-96.
18. Ward M, Ward B, Warren C, Silverstein S, Ray C, Paskhover B, Kornitzer J. The quality of YouTube videos as an educational resource for attention-deficit/hyperactivity disorder. Pediatr Neurol. 2020;103:84-85.
19. Dagar A, Falcone T. High viewership of videos about teenage suicide on YouTube. J Am Acad Child Adolesc Psychiatry. 2020;59:1-3.
20. Bernard A, Langille M, Hughes S, Rose C, Leddin D, Van Zanten SV. A systematic review of patient inflammatory bowel disease information resources on the World Wide Web. Am J Gastroenterol. 2007;102:2070-2077.
21. Charnock D, Shepperd S, Needham G, Gann R. DISCERN: an instrument for judging the quality of written consumer health information on treatment choices. J Epidemiol Community Health. 1999;53:105-111.
22. Kocyigit BF, Nacitarhan V, Koca TT, Berk E. YouTube as a source of patient information for ankylosing spondylitis exercises. Clin Rheumatol. 2019;38:1747-1751.
23. Landis JR, Koch GG. The measurement of observer agreement for categorical data. Biometrics. 1977;33:159-174.
24. Drozd B, Couvillon E, Suarez A. Medical YouTube videos and methods of evaluation: literature review. JMIR Med Educ. 2018;4:e3.
25. Amante DJ, Hogan TP, Pagoto SL, English TM, Lapane KL. 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. 2015;17:e106.
26. Kocyigit BF, Akaltun MS. Does YouTube provide high quality information? Assessment of secukinumab videos. Rheumatol Int. 2019;39:1263-1268.
27. Thapa P, Thapa A, Khadka N, Bhattarai R, Jha S, Khanal A, Basnet B. YouTube lens to attention deficit hyperactivity disorder: a social media analysis. BMC Res Notes. 2018;11:854.
28. D'Souza RS, D'Souza S, Strand N, Anderson A, Vogt MN, Olatoye O. YouTube as a source of medical information on the novel coronavirus 2019 disease (COVID-19) pandemic. Glob Public Health. 2020;15:935-942.
29. Singh AG, Singh S, Singh PP. YouTube for information on rheumatoid arthritis—a wakeup call? J Rheumatol. 2012;39:899-903.
30. Garg N, Venkatraman A, Pandey A, Kumar N. YouTube as a source of information on dialysis: A content analysis. Nephrology (Carlton). 2015;20:315-320.
31. Tolu S, Yurdakul OV, Basaran B, Rezvani A. English-language videos on YouTube as a source of information on self-administer subcutaneous anti-tumour necrosis factor agent injections. Rheumatol Int. 2018;38:1285-1292.
32. Lee JS, Seo HS, Hong TH. YouTube as a source of patient information on gallstone disease. World J Gastroenterol. 2014;20:4066-4070.
33. Şahin A, Şahin M, Türkcü FM. YouTube as a source of information in retinopathy of prematurity. Ir J Med Sci. 2019;188:613-617.
34. Gul M, Diri MA. YouTube as a source of information about premature ejaculation treatment. J Sex Med. 2019;16:1734-1740.
35. Gaş S, Zincir ÖÖ, Bozkurt AP. Are YouTube Videos Useful for Patients Interested in Botulinum Toxin for Bruxism? J Oral Maxillofac Surg. 2019;77:1776-1783.
36. Singh SK, Liu S, Capasso R, Kern RC, Gouveia CJ. YouTube as a source of information for obstructive sleep apnea. Am J Otolaryngol. 2018;39:378-382.