Research Article / Araştırma Makalesi

Impact of The Social Media on COVID-19: Is YouTube In or Out?

Covid-19 Hakkında Sosyal Medyanın Gücü, Youtube Faydalı mı, Değil mi?

Gökhan EYÜPOĞLU[1], Mustafa ÇALIK[2], Oğuzhan BOL[3], Tarık AKDEMİR[4]
Deniz ÖZEL ERKAN[5], Muhammed İkbal ŞAŞMAZ[6], Ramazan GÜVEN[1]

[1]Department of Emergency Medicine, Istanbul Basaksehir Cam and Sakura City Hospital İstanbul, TÜRKİYE
[2]University of Health Sciences GaziOsmanpasa Training and Research Hospital, Department of Emergency Medicine, İstanbul, TÜRKİYE
[3]Department of Emergency Medicine, Kayseri City Hospital, Kayseri, TÜRKİYE
[4]University of Health Sciences Haseki Training and Research Hospital, Department of Emergency Medicine, Istanbul, TÜRKİYE
[5]Akdeniz University , Statistics Advisory Unit, Antalya, TÜRKİYE
[6]Manisa Celal Bayar University Faculty of Medicine, Department of Emergency Medicine, Manisa, TÜRKİYE

Abstract

Background: The COVID-19 pandemic, which caused to closure of borders and curfews to be imposed all over the world, is one of the most important urgent public health problems in the last century. YouTube has become one of the information points for COVID-19 in this period while face to face meeting is diminished. With this study, it has been aimed to evaluate the proficiency of videos about COVID-19 symptoms on YouTube.
Materials and Methods: The terms “COVID-19 symptoms”, “coronavirus 19 symptoms”, “symptoms of coronavirus” and “symptoms of covid 19” have been searched on YouTube on 01 April 2020, the videos that were uploaded in 2020 and viewed more than 10.000 times until then were scanned and 719 videos were examined. Videos with an inappropriate language, videos with a duration of shorter than 1 minute, and videos that contain information incompatible with the title have been left out of this study. The videos were examined by two physicians in terms of discussing the symptoms and wrong information and graded. In case there was a difference between two evaluators, peer-review has been made by a third reviewer.
Results: 719 videos were scanned and 202 videos were included in the study. Among the uploaders Healthcare Personnel (3.5%) and Institutions (9.4%) are the two lowest groups. Among the uploader groups with 12 and higher points, Individuals Other Than Healthcare Personnel stood out among other uploaders significantly with a ratio of 46.7% (p: 0.019). Only 4.1% of the videos included wrong/imperfect information and a statistically significant relation between uploader groups was not determined (p>0.05).
Conclusions: It is important that COVID-19 symptoms are discussed correctly on YouTube. We are of the opinion that creation of more content by healthcare personnel, in a period with such heavy social media usage, will be useful in terms of informing the public.

Key Words: COVID-19, YouTube, Social media, Public informing

Öz.

Amaç: Tüm dünyada sınırların kapatılmasına ve sokağa çıkma yasaklarının uygulanmasına neden olan COVID-19 pandemisi, son yüzyılın en önemli acil halk sağlığı sorunlarından biridir. Günlük milyarlarca izleyicisi olan YouTube, yüz yüze görüşmenin azaldığı bu dönemde COVID-19 için bilgilenme noktalarından biri olmuştur. Birçok COVID-19 hastası YouTube’da kendi hastalık deneyimlerini anlatmışlardır. Bu çalışma ile YouTube sitesindeki COVID-19 semptomları ile ilgili videoların yeterliliğinin ölçülmesi amaçlandı.
Materyal ve Metod: 01 Nisan 2020 de YouTube'ta" COVID-19 symptoms", "coronovirus 19 symptoms", "symptoms of coronavirus" ve symptoms of COVID-19" aramalarını yaparak, 2020 yılında yüklenmiş ve o ana kadar 10.000`den fazla izlenmiş videolar tarandı ve 719 video incelendi. Birden fazla kere yer alan videoların tekrarları çıkarıldı. Dili uygun olmayan, süresi 1 dakikadan kısa olan, yükleyicisi tarafından yayından kaldırılmış ve başlığıyla uyumsuz videoları çalışma dışı bırakıldı. İki hekim tarafından videolar semptomları anlatma ve hatalı bilgi içerikleri açısından incelendi ve puanlandı. İki değerlendirici arasında fark olması durumunda 3. Hakem değerlendirmesi yapıldı.
Bulgular: 719 video tarandı ve 202 video çalışmaya alındı. Videoların %28.7 si>500.001 izlenmişti. Video yükleyicileri arasında Sağlık Çalışanları (%3.5) ve Sağlık Kuruluşları (%9.4) oranla düşük iki grubu oluşturmaktadı. Sağlık kuruluşları, Sağlık çalışanları,Bağımsız yükleyiciler, Bilinmeyen (p: 0.128) aralarında puanlama farkı bulunmadı. 12 puan ve üzeri grupta yükleyiciler arasında arasında Sağlık Çalışanı dışındaki kişiler %46.7 ile diğer yükleyicilerden anlamlı olarak ayrılmıştır (p:0.019). Tüm videoların sadece %4.1 inde Yanlış/Eksik bilgi yer aldı ve yükleyicileri grupları arasında istatistiksel olarak anlamlı bir ilişki saptanmamıştır (p>0.05).
Sonuç: Tüm dünyada en sık kullanılan sitelerden biri olan YouTube da COVID-19 semptomların doğru anlatılması pandemi döneminde kişilerin hastalığı tanıması ve kendini izole etmesi ve sağlık kuruluşuna başvurma kararı vermesi açısından önemlidir. Sağlık çalışanlarının, sosyal medyanın bu kadar fazla kullanıldığı dönemde, toplum bilgilendirilmesi açısından daha fazla içerik üretmesinin faydalı olacağı kanaatindeyiz.

Anahtar kelimeler: COVID-19, YouTube, Sosyal medya, Halk Bilgilendirilmesi

Corresponding Author/Sorumlu Yazar

Dr. Gökhan EYÜPOĞLU
Department of Emergency Medicine, Istanbul Basaksehir Cam and Sakura City Hospital İstanbul, TÜRKİYE

E-mail: gokhanbey982@gmail.com

Received / Geliş tarihi: 03.06.2022

Accepted / Kabul tarihi: 06.08.2022

DOI: 10.35440/hutfd.1065163

Introduction

Novel Coronavirus Disease 2019 (COVID-19) was initially identified in Wuhan province of China in December 2019, among a group of patients, who consulted with an undefined viral pneumonia form sharing a visit history of Huanan sea food market. The virus was isolated from biological samples and was identified as a beta coronavirus type being placed with another Severe Acute Respiratory Syndrome (SARS) and Middle East Respiratory Syndrome (MERS) (1). On 7 January 2020, the agent was identified as a novel coronavirus (2019- nCoV) that was not seen on humans before. Afterwards, the name of the 2019-nCoV disease was accepted as COVID-19 and the virus was named SARS-CoV-2 due to its similarity with SARS CoV (2). The number of people that caught the disease was 6.057.853 and the death toll was 371.166 worldwide when this article was written (3).

According to the Centers for Disease Control and Prevention (CDC) COVID-19 symptoms have been stated as fever or shivering, cough, shortness of breath, fatigue, myalgia, sore throat, nasal obstruction or runny nose, nausea or vomiting, diarrhea (4). While computerized axial tomography (CAT) scan is being used for diagnosis of COVID-19, accurate diagnosis is established by real-time polymerase chain reaction (RT-PCR) of nasopharyngeal or oropharyngeal swab specimens (5).

YouTube, one of the most popular three websites with more than 2 billion viewers per day, is a video sharing site that has been founded in 2005, providing free video streaming (6, 7). YouTube also has an important role in spreading health information. It has been used in medical education, too (8). YouTube conducts investigations on video contents in terms of security and copyrights (9). It does not make a verification of the information presented in the videos. However, most of the people get information about health on the internet today (10).

Misinformation causes important problems on public health and health systems in the time of pandemics (11).

It is important that people recognize symptoms of the disease and if they are sick early in the time of pandemics, in terms of isolating themselves and making the decision to apply for a healthcare provider. In our study, we examined the degree to which symptoms of the COVID-19 has been discussed correctly in YouTube videos.

Materials and Methods

The videos, which were uploaded to YouTube between 01 January 2020 and 01 April 2020 with titles such as “COVID-19 symptoms”, “coronavirus 19 symptoms”, “symptoms of coronavirus” and “symptoms of COVID-19” and viewed more than 10.000 times, have been included in this study. Duplicate videos, videos with an inappropriate language and videos with a duration of shorter than 1 minute (517 videos in total) have been left out of this study (Figure 1). Available videos have been divided into four groups according to type of the uploader: 1. Institutions, 2. Healthcare Personnel, 3. Individuals Other Than Healthcare Personnel and 4. Unknown Uploaders. All videos have been viewed by two physicians separately and in case there was a difference between two evaluators, peer-review has been made by a third reviewer physician.

Videos were examined to check if 8 symptoms that have been stated as COVID-19 symptoms by CDC have been discussed and then graded. The grading system was formed by giving 3 points to “Shortness of breath”, “Fever” and “Cough”, as they are also being considered Most Common and Serious on the symptoms list of WHO, 2 points to Fatigue and 1 point to other symptoms. In that respect, videos mentioning all of the 8 symptoms received 15 points. Besides, it has been considered as incorrect information in case symptoms that have not been stated by CDC were discussed in the videos. By comparing the inclusion of symptoms rates between four groups, it has been determined whether there is a statistically significant difference between the groups or not.

The study was deemed exempt by the Istanbul Basaksehir Cam and Sakura City Hospital Ethics Committee (KAEK/2021.06.119).

Statistically Analysis

The statistical analysis of the patient data were performed through Statistical Package for Social Science (SPSS) 24.0 (Armonk, NY: IBM Corp.). The categorical data are presented as percentage. Chi-square test was used to compare the differences between the groups in terms of frequencies. $P < 0.05$ was considered as statistically significant.

Results

It was found that 51% of the videos have been uploaded in less than 1 month and 56.4% of them have been viewed between 10.000 and 250.000 times according to view count. Percentage distribution of video uploader groups was shown at figure 2.

It was seen that incorrect symptom information has been shared in 8 videos (4.1%). The videos were divided into 2 groups: 1. Videos with total point below 12.2. Videos with 12 and higher total point. 77.7% of the videos were in the 1st group. The other descriptive data of the study has been shown in Table 1.

Scores of uploader groups have been calculated as Unknown Uploaders (not classified) 9.0 (7;10), Institutions 9.0 (7;12), Individuals Other Than Healthcare Personnel 9.5 (9;12) and Healthcare Personnel 10.0 (8;11) evaluating the Median rates (p: 0.13). Scoring between other groups has been shown in Table 2.

Among the uploader groups with 12 and higher points, Individuals Other Than Healthcare Personnel stood out among other uploaders significantly with a ratio of 46.7% (p:0.02).

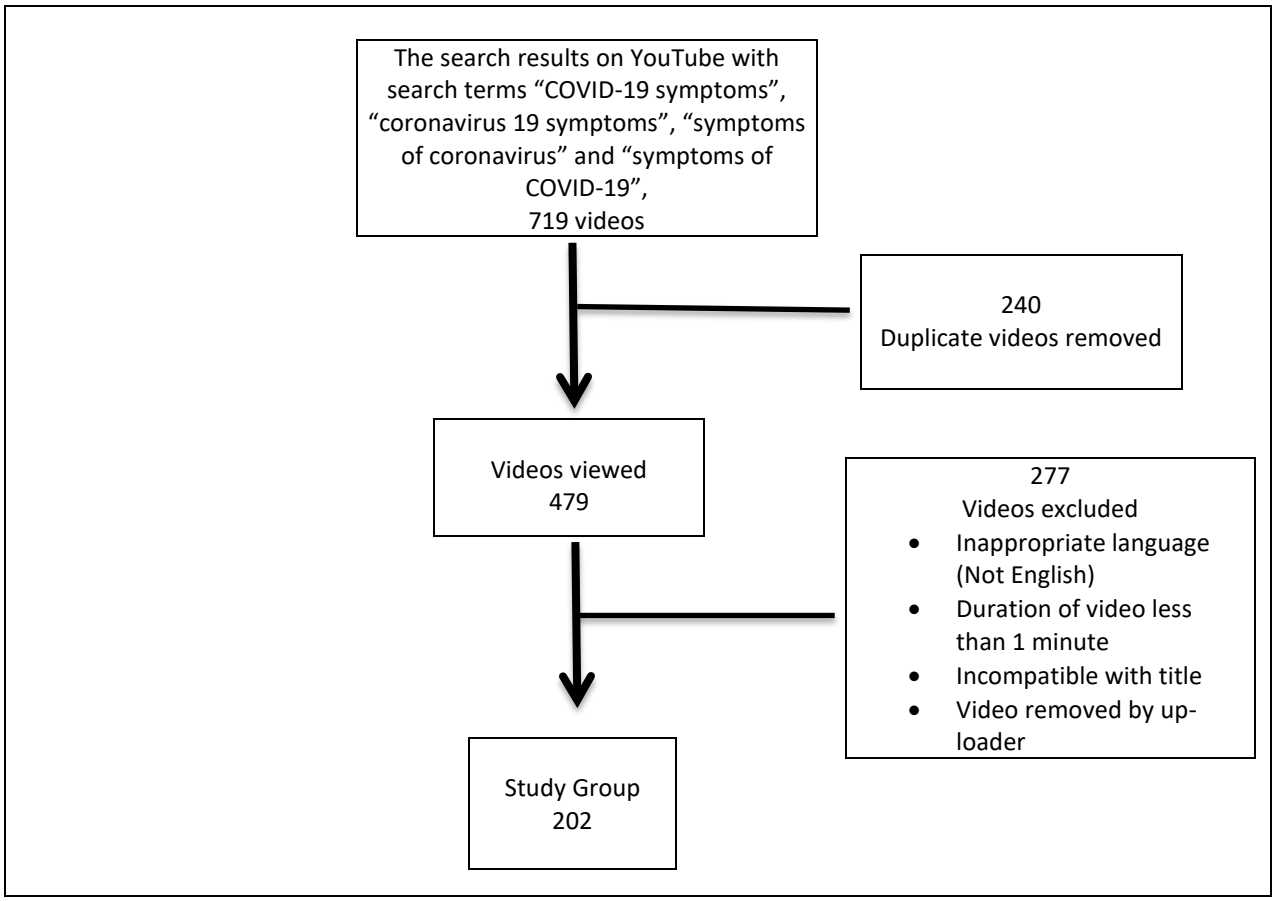

Figure 1. Flow chart showing systematic video search and selection process

A significant difference was not observed between scores of groups in terms of view count (Table 3).
No significant relation has been observed between view count and incorrect information inclusion. The group that included most incorrect information was the view count between 250.001-500.000 group in our study (Table 4).
No significant difference was defined between the uploaders in terms of incorrect information (Table 5).

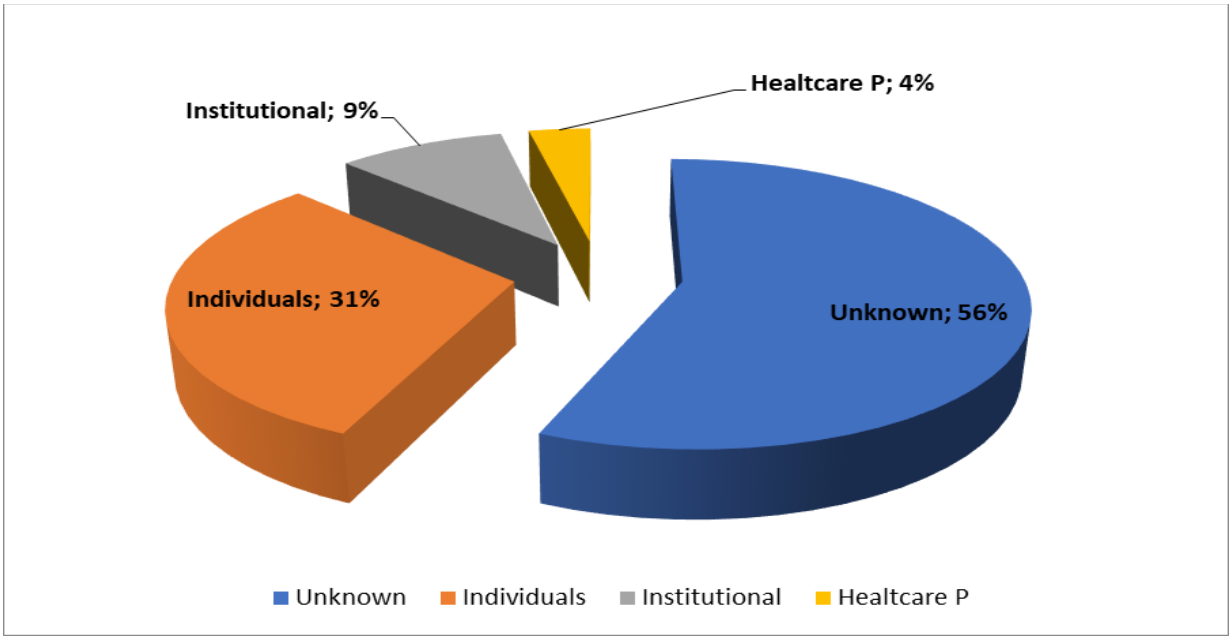

Figure 2. Video uploader groups

Table 1. Descriptive data of the study

		n	%	
Date of Upload	<1 month	103	51.0	
	1-3 months	99	49.0	
Type of Uploader	UNKNOWN (NOT CLASSIFIED)	114	56.4	
	INSTITUTIONAL	19	9.4	
	INDIVIDUALS	62	30.7	
	HEALTHCARE	7	3.5	
View	10.000 – 250.000	114	56.4	
	250.001 – 500.000	30	14.9	
	>500.000	58	28.7	
Incorrect information	NO	185	95.9	
	YES	8	4.1	
Group 1	<12	157	77.7	
Group 2	≥12	45	22.3	
TOTAL POINT		202	9.06±3.19*	9 (7-11) **

**Mean ± Sd **Median (Q1-Q3)*

Table 2. Scoring between all groups has been shown

		n	Mean±SD	Median (Q1; Q3)	Test	p
Date of upload	<1 month	103	9.39±3.25	9(8;12)	4.741.5	0.383
	1-3 months	99	8.73±3.1	9(7;11)		
Type of UPLOADER	Unknown (unclassified)	114	8.79±2.71	9(7;10)	5.69	0.128
	INSTITUTIONAL	19	9.26±2.94	9(7;12)		
	INDIVIDUALS	62	9.52±3.87	9.5(9;12)		
	HEALTHCARE	7	9±4.55	10(8;11)		
VIEW Count	10.000 – 250.000	114	8.92±3,2	9(7;11)	0.344	0.842
	250.001 – 500.000	30	8.97±3.47	9(7;12)		
	>500.000	58	9.4±3.04	9(8;11)		
INCORRECT Data	NO	185	9.32±2.9	9(8;11)	650	0.555
	YES	8	7.75±4.2	9.5(5;10.5)		

**Chi-square Test; Percentages of columns have been compared.*

Table 3. Distribution of the groups scoring below 12 points and above 12 points

		<12		≥12			p
		n	%	n	%	Test	
Month	<1 month	75	48	28	62	2.92	0.087
	1-3 months	82	52	17	38		
UPLOADER	UNKNOWN (NOT CLASSIFIED)	97	61.8	17	37.8	9.46	***0.019***
	INSTITUTIONAL	13	8.3	6	13.3		
	INDIVIDUALS	41	26.1	21	46.7		
	HEALTHCARE	6	3.8	1	2.2		
VIEW	10.000 – 250.000	91	58	23	51	0.741	0.691
	250.001 – 500.000	22	14	8	18		
	>500.000	44	28	14	31		
INCORRECT	NO	141	95	44	98		0.684
	YES	7	5	1	2		

**Chi-square Test; Percentages of columns have been compared.*

Table 4. Correct or incorrect information distribution between view groups

		VIEW				
		10.000 – 250.000	250.001 – 500.000	>500.000	Test*	*P*
INCORRECT	NO	105	25	55	6.467	***0.03***
		98.1%	86.2%	96.5%		
	YES	2	4	2		
		1.9%	13.8%	3.5%		

**Fisher's Exact Test; Percentages of columns have been compared.*

Table 5. Correct or incorrect information distribution between uploader groups

		UPLOADER					
		UNKNOWN (NOT CLASSIFIED)	**INSTITUTIONAL**	**INDIVIDUALS**	**HEALTHCARE**	**Test***	***P***
INCORRECT	NO	109	17	55	4	3.09	0.35
		95.6%	89.5%	98.2%	100.0%		
	YES	5	2	1	0		
		4.4%	10.5%	1.8%	0.0%		

**Fisher's Exact Test; Percentages of columns have been compared.*

Discussion

In present study, where the videos about COVID-19 symptoms uploaded to YouTube by different uploaders (institutions, individuals other than healthcare personnel, healthcare personnel, unknown uploaders) were evaluated, it was seen that the videos include adequate information in general manner. The video uploaders were largely apart from healthcare personnel or health institutions (87.1%). Fever, cough, shortness of breath, being the most common symptoms of COVID-19, and fatigue were discussed in the videos commonly. Only 4.1% of the videos included misinformation.

Among the uploaders Healthcare Personnel (3.5%) and Institutions (9.4%) are the two lowest groups. In a similar study, where the most viewed 69 videos on YouTube about COVID-19 disease have been examined, it has been seen that groups involving health institutions or healthcare personnel [Education (3%), Professional (7%) and Government (3%)] also had a low rate. (12). Social media is a useful resource for the education of public and the patients (13). Governments imposed quarantines and curfews in all countries in the time of pandemic and social media usage of people has increased in this period. Healthcare personnel and health institutions might have fallen behind on content creation as YouTube is not a scientific platform. Still it is evaluated as a deficiency that health institutions produced a low number of videos on behalf of raising the awareness of the public in the time of such a pandemic.

The group that included most incorrect information was the view count between 250.001-500.000 group in our study.

No significant relation has been observed between view count and incorrect information inclusion. A total of 92 videos have been examined in the study of Zincir et al., in which patient education via YouTube videos were investigated, and no relation has been observed between view rates and efficiency of videos (14). Present study showed that as YouTube appeals to general audience, incorrect information could not be recognized by the public thus, view rates were not affected.

No significant difference has been observed between videos that have been uploaded in less than one month and videos that have been uploaded 1 to 3 months ago in terms of scoring when the upload time and scoring was compared. It is one of the indicators of us having correct information about the major symptoms of the disease from the very beginning that the videos about COVID-19 symptoms, which have been shot in January-February-March, have similar scores. In the review of Zu et al. dated February 2020, fever, cough and fatigue have been stated as major symptoms of COVID-19 (15).

No statistical difference has been found between uploader groups following the grading of symptoms. It has been concluded that the total points of fever, cough and shortness of breath, as the most common symptoms, being 9 and these 3 symptoms being mentioned commonly in the majority of videos has led to the median value being 9 in all videos and no significant difference being observed. In the study of Li et al., on most viewed YouTube videos about COVID-19, it has been seen that there are significant differences between the government/professional group and 3 groups only, when the government/professional group is compared with six groups (entertainment news, internet news, network news, Consumer, newspaper, education) (12). It has been concluded that there is no difference between uploaders of videos about COVID-19 due to the fact that correct information on COVID-19 is shared by various sources and videos with correct information are being made by content creators other than healthcare personnel for YouTube.

When the uploader groups with 12 and higher points were examined, individuals other than healthcare personnel stood out among other uploaders significantly ($p<0.05$). It has been observed that individuals other than healthcare personnel generally talked about their personal experiences on disease in the videos they produce about COVID-19. For example, one YouTuber, who normally makes videos about sound systems in music in the "Audioholics" channel on YouTube, was observed to make videos about his sickness process as he got COVID-19 and received 12 points with the video he/she discussed the symptoms. Besides, healthcare personnel and health institutions shared about the basics and do not go into details mostly and thus, they received low points.

When the view rates are checked, the group with a total point below 12 and the group with 12 and higher total point were seen to be viewed equally. It was worth to pay attention that neither inclusion of incorrect information affects the view count negatively nor the inclusion of correct information increases it. No significant relation between the

view count and "benefit score" had been found in the Botox-YouTube study of Gaş et al. (16). What needs to be done on YouTube and similar sharing sites is sharing more posts quantitatively rather than qualitatively. Therefore, more individuals can be reached in total by this way.

Study Limitations

There are some limitations to this study. First, the study was conducted over a period of time (01 January 2020 and 01 April 2020), and more videos regarding COVID-19 symptoms may have been uploaded since that period. Second, COVID-19 symptoms which was approved by the CDC and WHO have changed over time.

Conclusion

The videos on YouTube, in which COVID-19 symptoms are discussed, are adequate in general manner independently of the uploader types. It is important that COVID-19 symptoms are discussed correctly on YouTube, which is one of the most frequently used sites all over the world, in terms of people recognizing the disease in the time of pandemic and isolating themselves and giving the decision to apply for a healthcare provider. We are of the opinion that creation of more content by healthcare personnel, in a period with such heavy social media usage, will be useful in terms of informing the public.

Abbreviations

CAT: Computerized axial tomography
CDC: Centers for Disease Control and Prevention
COVID-19: Novel Coronavirus Disease 2019
MERS: Middle East Respiratory Syndrome
SARS CoV-2: Severe Acute Respiratory Syndrome Coronavirus-2
WHO: World Health Organization

Ethical Approval: The study was deemed exempt by the Istanbul Basaksehir Cam and Sakura City Hospital Ethics Committee (KAEK/2021.06.119)

Author Contributions:
Concept: G.E., R.G.
Literature Review: G.E., O.B.
Design: T.A.
Data acquisition: G.E., M.I.S.
Analysis and interpretation: R.G., D.O.E.
Writing manuscript: G.E., M.C.
Critical revision of manuscript: M.I.S., R.G.
Conflict of Interest: *The authors declared no conflicts of interest with respect to the authorship and/or publication of this article.*
Financial Disclosure: *None of the authors have a financial relationship with a commercial entity that has an interest in the subject mater of this manuscript.*

References

1. Na Z, Dingyu Z, Wenling W, Xingwang L, Bo Y, Jingdong S, et al. A novel coronavirus from patients with pneumonia in China, 2019. N Engl J Med 2020; 382:727-733.
2. covid19.saglik.gov.tr. Covid 19 Rehberi Epidemiyoloji ve Tani [updated 7 December 2020; cited 3 January 2021]. Available from: https://covid19.saglik.gov.tr/TR-66337/genel-bilgiler-epidemiyoloji-ve-tani.html
3. who.int. World Health Organization. (2020). Coronavirus disease 2019 (COVID-19): situation report, 133. [updated 1 June 2020; 3 January 2021]. Available from: https://apps.who.int/iris/bitstream/handle/10665/332281/nCoVsitrep01Jun2020eng.pdf?sequence=1&isAllowed=y
4. cdc.gov. Symptoms of Covid 19 [updated 22 Mar. 2022; 3 January 2021]. Avaible from: https://www.cdc.gov/coronavirus/2019-ncov/symptoms-testing/symptoms.html
5. Long C, Xu H, Shen Q, Zhang X, Fan B, Wang C, et al. Diagnosis of the Coronavirus disease (COVID-19): rRT-PCR or CT? Eur J Radiol. 2020; 126:108961.
6. Alexa.com. Top Websites Ranking [updated 1 May 2022; 3 January 2021]. Avaible from: www.alexa.com
7. Youtube.com. How youtube Works? [updated 11 May 2022; 3 January 2021]. Avaible from: https://www.youtube.com/howyoutubeworks/
8. Wang AT, Sandhu NP, Wittich CM, Mandrekar JN, Beckman TJ. Using social media to improve continuing medical education: a survey of course participants. Mayo Clin Proc. 2012;87(12):1162-1170.
9. Youtube.com. Community Guidelines [updated 11 May 2022; 3 January 2021]. Avaible from: https://www.youtube.com/intl/tr/about/policies/#community-guidelines
10. Pewreseach.org. Health Online 2013 [updated 15 Jan 2013; 3 January 2021]. Avaible From: https://www.pewresearch.org/internet/2013/01/15/information-triage/
11. Nber.org. Misinformation During a Pandemic [updated June 2020; 3 January 2021]. Avaible from: https://www.nber.org/system/files/working_papers/w27417/w27417.pdf
12. Li HO, Bailey A, Huynh D, Chan J. YouTube as a source of information on COVID-19: a pandemic of misinformation? BMJ Glob Health. 2020;5(5):e002604.
13. Siminerio L, Ruppert K, Huber K, Toledo FGS. Telemedicine for Reach, Education, Access, and Treatment (TREAT): linking telemedicine with diabetes self-management education to improve care in rural communities. Diabetes Educ. 2014;40(6):797-805.
14. Özdal Zincir Ö, Bozkurt AP, Gaş S. Potential Patient Education of YouTube Videos Related to Wisdom Tooth Surgical Removal. J Craniofac Surg. 2019;30(5):e481-e484.
15. Zu ZY, Jiang MD, Xu PP, Chen W, Ni QQ, Lu GM, et al. Coronavirus Disease 2019 (COVID-19): A Perspective from China. Radiology. 2020;296(2):E15-E25.
16. Gaş S, Zincir ÖÖ, Bozkurt AP. Are YouTube Videos Useful for Patients Interested in Botulinum Toxin for Bruxism? J Oral Maxillofac Surg. 2019;77(9):1776-1783.