Analysis of YouTube© Videos Regarding Breastfeeding During the Coronavirus Disease (COVID-19) Pandemic

Merve Azak[1] · Büşra Yılmaz[2] · Nevin Şahin[2]

Abstract

Introduction During the coronavirus disease (COVID-19) pandemic, which has significantly impacted public health, it is crucial to raise awareness and access to accurate information about breastfeeding for healthy growth and development. This descriptive study aimed to evaluate the content, reliability, and quality of YouTube videos on COVID-19 and breastfeeding.

Methods The YouTube platform was searched for the English keywords "COVID-19" and "breastfeeding" in March 2021. A total of 325 videos were reached. Two independent researchers analyzed the content of 43 videos that met the inclusion criteria. The content quality of the videos was evaluated using the COVID-19 and Breastfeeding Score, which was prepared by researchers in line with international guidelines, the reliability of the videos was analyzed using the DISCERN, and the content quality was evaluated using the Global Quality Score (GQS).

Results The majority (72.1%) of the 43 videos included in the study were informative. In terms of the video origins, most had been uploaded in the U.S., and most had been created by news agencies or physicians. Using the DISCERN tool, 32.6% of videos scored 5 points, and 37.2% of videos scored five points using the GQS tool. Videos grouped as informative scored significantly higher than those grouped as misleading. The GQSs for the videos featuring parents were significantly lower than those for the videos featuring physicians or other healthcare professionals.

Discussion During the COVID-19 pandemic, YouTube videos served as an essential and easily accessible source of information about breastfeeding for mothers concerned about various aspects of the disease. This study showed that videos on breastfeeding and COVID-19 have high view rates but low quality and low reliability.

Significance

What is currently known? The YouTube platform has been a significant source of misleading information during public health crises, including the H1N1, Ebola, and Zika outbreaks. During the COVID-19 pandemic, many women used YouTube videos to search for information about breastfeeding.

What does this article add? YouTube videos about breastfeeding and COVID-19 have high views. However, these also include videos that are low in quality and reliability. The information content of YouTube videos needs to be improved and standardized before the videos can be considered a reliable source of information about COVID-19 and its effects on breastfeeding.

✉ Büşra Yılmaz
ylmzbsr678@gmail.com

Merve Azak
merve.azak@iuc.edu.tr

Nevin Şahin
nevinsahin34@yahoo.com

1   Department of Pediatric Nursing, Florence Nightingale Faculty of Nursing, İstanbul University-Cerrahpaşa, Sisli, Istanbul, Turkey

2   Department of Women Health and Gynecologic Nursing, Florence Nightingale Faculty of Nursing, İstanbul University-Cerrahpaşa, Sisli, Istanbul, Turkey

Introduction

Breastfeeding has important benefits for maternal and infant health (ACOG, 2021; CDC, 2021). According to the World Health Organization (WHO), breast milk provides optimum nutrition, and it recommends that infants should be fed exclusively breast milk for the first 6 months after birth and fed breast milk, in addition to appropriate complementary foods, until they are aged at least 2 years (WHO, 2020a). On 11 March 2020, the WHO declared a global pandemic due to an outbreak of Coronavirus Disease (COVID-19) (WHO, 2020b). Subsequently, the virus that causes COVID-19 disease was detected in breast milk, leading to concerns about risks associated with breastfeeding (ACOG, 2021; CDC, 2021). However, breastfeeding was not contraindicated, according to the research (ACOG, 2021; CDC, 2021). Fan et al., found that breast milk samples from mothers who were positive for COVID-19 in the first 3 months of pregnancy tested negative for the coronavirus 24 h and 16 days post-delivery (Fan et al., 2020). One study suggested that newborns should be isolated during the COVID-19 pandemic and that infants should not be breastfed (Chen et al., 2020). However, other publications and organizations criticized the latter suggestion, stating that breast milk is not a vehicle for COVID-19 and, on the contrary, that breast milk contains specific antibodies that protect newborns against possible COVID-19 infection (ACOG, 2021). A number of studies noted that routine newborn weaning in cases of asymptomatic COVID-19 infection is inappropriate, as it would hinder both the mother–infant relationship and breastfeeding (ACOG, 2021; CDC, 2021; UNICEF, 2022). Similarly, the WHO stated that there is no reason to prevent or stop breastfeeding in extraordinary situations, such as pandemics (WHO, 2020c). Instead, the WHO recommended that infants with suspected or positive COVID-19 infection should remain with their mothers to facilitate skin-to-skin contact known as kangaroo care (WHO, 2020a). No results have suggested that separation prevents the transmission of COVID-19 between the parent and infant (WHO, 2020a). However, research has indicated that separation could potentially exacerbate the course of the disease by stressing the mother, as well as the infant (Stuebe, 2020). In a qualitative study conducted in Canada, mother—infant separation during the pandemic led to problems with breastfeeding postpartum. Postpartum women reported problems with breastfeeding and turned to online support due to a lack of face-to-face breastfeeding support (Rice & Williams, 2021).

The COVID-19 disease virus is spread mainly by close person-to-person contact (0–2 m). The virus can be transferred through droplets emitted when an infected individual sneezes or coughs (CDC, 2021). The virus can also be transferred by ocular routes or by touching contaminated objects and surfaces (CDC, 2021). In light of these routes of transmission, international organizations have recommended that women who are positive or suspected to be positive for COVID-19 can continue breastfeeding (ACOG, 2021). However, before touching their infants, mothers are advised to wash their hands with soap and water for 20 s or use an alcohol-containing hand sanitizer (Drozd et al., 2018). They are also advised to use a medical mask to cover their mouths and nose while breastfeeding their infants replace the mask with a new one if it becomes moist, and discard the mask immediately after use (Drozd et al., 2018). Each mask should be worn only once, and care should be taken to avoid touching the front of the mask (Bora et al., 2018). Breastfeeding mothers should have a napkin for sneezing and coughing and discard the napkin immediately after use. Afterward, they should wash their hands thoroughly using soap and warm water or use an alcohol-containing hand sanitizer (Beck et al., 2014). In addition, they should regularly disinfect all contact materials and surfaces (ACOG, 2021; WHO, 2020b). If a mother cannot breastfeed due to severe COVID-19 symptoms or complications, breast milk should be given to the infant with precautions. If breastfeeding mothers diagnosed with COVID-19 are treated at home, it is recommended that they continue to breastfeed by following the hygiene rules mentioned above (WHO, 2020b). Other than when breastfeeding, COVID-19 positive mothers should isolate in a separate room from other family members, including the infant. During the isolation period, a healthy individual should take responsibility for the infant's care needs, other than breastfeeding (CDC, 2021; WHO, 2020b).

During the COVID-19 pandemic, which has significantly impacted public health, it is crucial to raise awareness about the importance of breastfeeding for healthy growth and development. Compliance with social isolation rules is an important aspect of COVID-19 prevention. As a result of these rules, individuals have been unable to access information face-to-face during the pandemic. For this reason and because of the ease with which information can be found online, many people have turned to the Internet to find answers to health-related questions and concerns during the pandemic (Li et al., 2020). With the development of technology and the ease with which information can be found online, the Internet has become a crucial source of information for individuals looking for answers to health-related questions and concerns (Drozd et al., 2018).

YouTube has great potential to provide easy access to health-related information. However, the accuracy and usefulness of the information that appears on YouTube are unknown (Drozd et al., 2018). The dissemination of false information during a pandemic can fuel public paranoia and panic and hamper efforts to contain the outbreak, as reported in a previous study (Bora et al., 2018). Despite the doubtful accuracy of some YouTube content and deficiencies in the use and presentation of sources, YouTube viewers generally accept the content as popular, reliable, and valid (Beck et al., 2014). YouTube videos on breastfeeding have the potential to influence the beliefs and practices of new mothers.

There are many YouTube videos, likes, and views on the topic of breastfeeding. However, no study has analyzed whether YouTube videos about breastfeeding during the COVID-19 pandemic are a reliable source of information. The aim of this study was to evaluate the content, quality, and validity of information in YouTube videos on breastfeeding that were posted during the COVID-19 pandemic. Our specific research questions were as follows:

1. Is YouTube video content on breastfeeding during the COVID-19 pandemic useful or misleading?
2. Are YouTube videos on breastfeeding during the COVID-19 pandemic reliable?
3. In terms of quality, how do YouTube videos on breastfeeding during the COVID-19 rate?

The results of our study can guide the creation of YouTube video content on COVID-19 and breastfeeding and contribute to supporting mothers to obtain accurate information about breastfeeding.

Methods

Design

We conducted this descriptive study to evaluate the content, reliability, and quality of YouTube videos on COVID-19 and breastfeeding.

Setting and Sample

We conducted a search of the YouTube platform on 1 March 2021 using the keywords "COVID-19 and breastfeeding." Based on Cohen's effect size (0.40), 85% power, and a 0.05 error margin, a sample size of 116 was calculated using G*Power software, version 3.1.9.7. Only videos with breastfeeding and COVID-19 content were included in the analysis. To take account of video exclusions after reviewing the content, the selected sample size was 325. To ensure that previous search history did not affect the YouTube search, we used a cache-cleared browser and created

a new account for the search. As English is the universal language adopted in many regions worldwide, we included only English videos.

Procedure

The videos were sorted by relevance. We excluded videos with 300 or fewer views, videos unrelated to COVID-19, and videos exceeding 20 min in duration, as videos with a duration of 15–16 min have the highest viewing rates, according to the literature (Cheng et al., 2007). In accordance with standard content analysis practice, the videos (n=325) were sorted by relevance. We excluded videos with 300 or fewer views (n=164), videos unrelated to COVID-19 (n=62), videos exceeding 20 min in duration (n=24), non-English videos (n=19), and duplicated videos (n=13). After the application of these exclusion criteria, 43 videos were included in the analysis. A flow diagram of the video selection and review process is shown in Fig. 1. We saved the videos (n=43) in a playlist for later analysis because search results on YouTube may change daily. The uniform resource locators (URLs) of these videos were saved separately as a backup.

Two researchers, one undertaking a doctorate in women's health and disease nursing and the other undertaking a doctorate in pediatric nursing, reviewed and analyzed the videos. We used the Kappa coefficient for the determination of inter-rater consistency. Following data capture, the same researchers independently grouped grouped the videos as informative or misleading. The videos were further grouped according to whether they were presented by individuals (personal experiences) or health care professionals. Another reviewer evaluated these. If the two authors were unable to reach a consensus on the video grouping category, they consulted a third reviewer, a published author
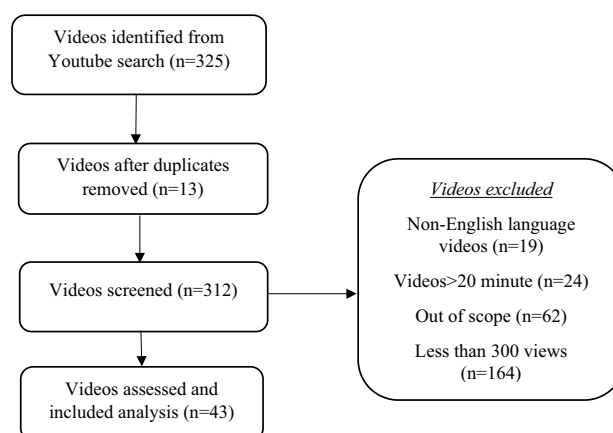

Fig. 1 Flow diagram for review of Youtube© videos on breastfeeding and COVID-19

and professor of women's health and disease nursing. The reviewers deemed the videos misleading if they contained one or more false statements, as judged by major public health guidelines at the time of the release of the videos. The reviewers then calculated the DISCERN, COVID-19 and Breastfeeding Scale (CBS), and Global Quality Scale (GQS) scores for each video.

This study did not require Institutional Review Board approval, as YouTube is a public platform, and the study did not include patient data.

Evaluation of the Videos

The following descriptive characteristics of the videos were recorded: title; URL; country of origin; length (minutes); number of views, likes, dislikes, and comments; time on YouTube; source (e.g., health care professional or individual), person or people featured in the video; and their gender. The reliability and quality of the video content were assessed using the GQS and a modified version of the DISCERN instrument. As no validated assessment tools were available to evaluate online information on breastfeeding during the COVID-19 pandemic, we created a new 7-point scale (0–7 points) to assess the usefulness of the video content for the average viewer. This scale was developed based on published guidelines of international organizations. Table 1 provides information on the tools used in evaluating the video content.

Usefulness Evaluation

The usefulness of the videos was assessed based on agreement with reported guidelines on breastfeeding and COVID-19 by international agencies, such as the) and CDC (2021). Each item on the CBS was assigned a score of 1 for each "yes" answer. The total possible score was 7 points. As reported previously, higher scores denote higher quality videos in terms of content quality and validity (Yüce et al., 2021).

Reliability Evaluation

To evaluate the reliability of each video, the DISCERN scale developed by Charnock et al. (1999) to evaluate written health information was used (Table 1). The scale consists of five questions, which are answered "yes" or "no." One point is awarded for each question that is answered "yes." The possible total score is in the range of 0–5 points. In our study, videos that scored higher than three on the DISCERN scale were considered to be reliable and to contain high-quality information, whereas those that scored lower than three were considered to be unreliable and to contain low-quality (misleading) information. High-quality videos contained information based on scientific evidence, and low-quality (misleading videos) contained information not based on scientific evidence (e.g., personal experience). Videos with a score of three were considered medium quality that required additional sources of information. Videos with a

Table 1 Reliability, quality and comprehensiveness assessment tools of internet videos for breastfeeding in COVID-19

Comprehensiveness
Should the mother diagnosed with COVID-19 breastfeed the infant?
Why should the mother diagnosed with COVID-19 breastfeed the infant?
What are the hygiene rules to be followed when a mother diagnosed with Covid-19 breastfeeding the infant?
Should the mother diagnosed with COVID-19 wash her hands while breastfeeding the infant?
Should the materials used during breastfeeding be disinfected?
Should the mother diagnosed with COVID-19 wear a mask while breastfeeding?
If the mother diagnosed with COVID-19 cannot breastfeed her baby (because of symptoms, complications etc.), should she express her milk and give her baby?
Reliability
Are the explanations given in the video clear and understandable?
Are useful reference sources given? (publication cited, from valid studies)
Is the information in the video balanced and neutral?
Are additional sources of information given from which the viewer can benefit?
Does the video evaluate areas that are controversial or uncertain?
Global quality scale
Poor quality, poor flow, most information missing, not helpful for patients
Generally poor, some information given but of limited use to patients
Moderate quality, some important information is adequately discussed
Good quality good flow, most relevant information is covered, useful for patients
Excellent quality and excellent flow, very useful for patients

score of less than three were considered poor quality and unreliable (Charnock et al., 1999).

Quality Evaluation

Based on the validity and reliability evaluations of the videos, we valuated the overall quality of the videos using the 5-point GQS developed by Bernard et al. (2007). In terms of video quality, we scored the videos as follows: very poor (1 point), poor (2 points), good (3 points), very good (4 points), and excellent (5 points). Videos that received 1 and 2 points were considered of no use and of limited use, respectively. Videos that received, 3, 4, and 5 points were considered somewhat useful, useful, and very useful, respectively.

Statistical Analysis

SPSS for Windows (Statistical Package for Social Sciences for Windows, Version 21.0) was used to evaluate the data. The Kolmogorov–Smirnov test was employed to assess the conformity of the data with a normal distribution. Descriptive data were used to define continuous variables (mean, standard deviation, minimum, median, and maximum). The Kruskal–Wallis test was used to compare three or more groups for quantitative data that were not normally distributed. The agreement between the two independent observers was calculated based on the Kappa value. Spearman's correlation analysis examined possible correlations of the total content score with the DISCERN score, GQS, CBS, and video characteristics. A *p*-value of < 0.05 was considered significant.

Results

The total number of views of the 43 videos included in the study was 210,816. The videos' total likes, dislikes, and comments were 1724, 260, and 250, respectively. The average duration that each of the 43 videos had been on YouTube was 102 days (days: 2–328). The total length of the videos *(n = 43)* was 16,118 s. In terms of the content of the videos, 72.1% (*n* = 31) contained reliable information, and 25.6% (*n* = 11) contained unreliable information. Only one video (2.3%) was based on personal experiences. The Kappa value of the two independent observers was 0.89.

In terms of the country of origin of the videos, 39.5% (*n* = 17) were uploaded in the U.S., 9.3% (*n* = 4) were uploaded in the U.K., 14.0% (*n* = 6) were uploaded in Africa, and 37.2% (*n* = 16) were uploaded in other regions (Canada, Philippines, Korea, etc.). Of the videos, 23.3% (*n* = 10) were prepared by government, academic, or hospital sources, 39.5% (*n* = 1 7) were prepared by news agencies, and 37.2% (*n* = 16) were prepared by members of the public. Of the 43

videos, 20.9% (*n* = 9) featured parents, 58.2% (*n* = 25) featured physicians, and 20.9% (*n* = 9) featured other healthcare professionals (nurse, midwife, dietician, etc.). In total, 81.4% (n = 35) of the videos featured breastfeeding mothers, 11.6% (n = 5) featured fathers, and 7% (n = 3) featured both mothers and fathers. Based on the DISCERN tool, 32.6% (*n* = 14) of the videos scored 5 points, and 30.2% (*n* = 13) scored 4 points (good-quality videos that contained useful information for breastfeeding mothers). Using the GQS, 37.2% (*n* = 16) of the videos scored 5 points (excellent quality), and 30.2% (*n* = 13) scored 4 points (good quality) (Table 2). According to the content analysis performed using the newly developed CBS, item 1 (Should a mother diagnosed with COVID-19 breastfeed?) and item 4 (Should a mother diagnosed with COVID-19 wash her hands before breastfeeding?) were mentioned most often in the videos prepared by international organizations and media organizations.

The scores of the videos grouped as informative were significantly higher (DISCERN, GQS, and CBS) compared to those of the videos grouped as not informative. The videos uploaded in the U.S. and the U.K. had a statistically significantly higher CBS score than those uploaded in the other regions. The videos featuring parents had lower GQSs than those featuring physicians and other health professionals. There was no statistically significant difference in the DISCERN scores, GQSs, and CBSs regarding the source of the videos and the gender of the individuals who were featured in the videos (Table 3). Table 4 presents the results of the correlation analysis of the data. The correlations between country and likes; likes and dislikes; likes and comments; likes and views; views and dislikes; genders and sources; who took part in the videos and GQS; DISCERN and GQS were positive, whereas those between lengths and views; sources and likes; lengths and dislikes; DISCERN and types; DISCERN and sources; GQS and types were negative. The relationship between correlations was weak to moderate ($p < 0.05$).

Table 5 shows the interobserver reliability for the DISCERN score, GQS, and CBS. Table 5 shows the interobserver reliability for the DISCERN scores, GQSs, and CBSs. Based on the scores of the two researchers, there was good agreement on all three assessment tools.

Discussion

There is no quality control of information shared online. Thus, the scientific accuracy and quality of medical information online can vary, as the accuracy of the information is the responsibility of the person that posts the information or uploads the video. This situation leads to information pollution and significant useful information (Ozdede & Peker, 2020). According to the literature, YouTube videos

Table 2 Summary characteristics of the videos (n = 43)

Characteristic/Parameter	Total count	Median (range)† or % (95% CI)‡
Video metrics		
No. of views	210,816	1256 (205–87,895)†
Likes	1724	13 (0–699)†
Dislikes	260	1 (0–13)†
Comments	250	1 (0–83)†
No. of days in YouTube©	–	102 (2–328)†
Video length (seconds)	16,118	148 (37–5656)†
Video type		
Informative	31	72.1 (58.1–86.0)‡
Misleading	11	25.6 (11.9–39.1)‡
Personal experience	1	2.3 (1.9–7.0)‡
Region of origin of the videos		
USA	17	39.5 (24.3–54.7)‡
England	4	9.3 (0.2–18.3)‡
Africa	6	14.0 (3.1–24.7)‡
Others	16	37.2 (22.1–52.2)‡
Source of release		
Ministry/academic/hospital	10	23.3 (10.1–36.4)‡
News channels	17	39.5 (22.0–52.3)‡
Individual	16	37.2 (20.2–49.3)‡
Who took part in the videos		
Parent	9	20.9 (8.2–33.6)‡
Doctor	25	58.2 (26.7–102.3)‡
Other healthcare professionals	9	20.9 (8.2–33.6)‡
Gender of the player	35	81.4 (69.2–93.5)‡
Female		
Male	5	11.6 (1.6–21.6)‡
Both	3	7.0 (0.9–14.9)‡
Reliability score of the videos (DISCERN tool)		4 (0–5)†
Videos with total score 1	2	4.6 (1.9–11.2)‡
Videos with total score 2	7	16.3 (4.7–27.7)‡
Videos with total score 3	7	16.3(4.7–27.7)‡
Videos with total score 4	13	30.2 (15.9–44.5)‡
Videos with total score 5	14	32.6 (17.9–47.1)‡
Quality score of the videos (GQS tool)		4 (0–5)†
Videos with total score 1	1	2.4 (1.3–7.0)‡
Videos with total score 2	5	11.6 (1.5–21.6)‡
Videos with total score 3	13	30.2 (15.9–44.5)‡
Videos with total score 4	8	18.6 (6.4–30.7)‡
Videos with total score 5	16	37.2 (22.1–52.2)‡

CI confidence interval, *GQS* global quality score

†Median (range); ‡% (95% CI)

can serve as an educational tool and a of useful information. However, not enough studies have examined the accuracy of the information presented in educational videos (Ozdede & Peker, 2020) Some studies that analyzed YouTube videos (both English and non-English) with COVID-19 content focused on modes of transmission of COVID-19 disease and prevention measures (Basch et al., 2020; D'Souza et al., 2020; Ramírez et al., 2020; Szmuda et al., 2020). Prior to the COVID-19 pandemic, many people turned to educational health-related YouTube videos for information on various topics, such as pregnancy, rheumatic diseases, and food safety. Except for those during the COVID-19 pandemic process, video analyses were on specific topics, such as pregnancy (Yuksel & Cakmak, 2020), dentistry (Ozdede

Table 3 Comparison of indices according to some parameters

Variables	Groups	DISCERN		GQS		CBSS	
		Mean ± SD	p-value	Mean ± SD	Bonferroni p-value	Mean ± SD	Bonferroni p-value
Video type	Informative[a]	4.03 ± 0.98	0.006*	4.16 ± 0.97	0.002*	5.03 ± 1.47	0.001*
	Misleading[b]	2.64 ± 1.29		2.73 ± 1.01		3.00 ± 0.89	
	Personal experience[c]	5.00 ± 0.00		3.00 ± 0.00		7.00 ± 0.00	
	KW χ^2	10.160		12.457		14.599	
	Bonferroni	a–b		a–b		a–b	
Region of origin	America[a]	3.87 ± 1.30	0.669	3.60 ± 1.24	0.244	4.20 ± 1.70	0.045*
	England[b]	4.50 ± 1.00		3.50 ± 1.28		3.75 ± 0.98	
	Africa[c]	3.50 ± 1.73		4.25 ± 1.50		5.25 ± 2.22	
	Others[d]	3.92 ± 0.90		4.42 ± 0.79		5.75 ± 0.97	
	KW χ^2	1.556		4.163		8.031	
	Bonferroni	–		–		a–d, b–d	
Source of release	Ministry/academic/hospital	4.30 ± 0.67	0.074	430 ± 1.06	0.180	5.10 ± 0.99	0.278
	News channels	3.31 ± 1.25		3.69 ± 1.14		4.31 ± 1.82	
	Individual	3.88 ± 1.20		3.63 ± 1.15		4.63 ± 1.71	
	KW χ^2	6.920		4.885		3.848	
Who took part in the videos	Parent[a]	3.22 ± 1.48	0.391	2.44 ± 1.24	0.006*	3.00 ± 1.58	0.958
	Doctor[b]	3.88 ± 1.24		3.84 ± 1.11		3.84 ± 1.68	
	Other healthcare professionals[c]	3.67 ± 0.87		4.22 ± 0.97		3.44 ± 1.33	
	KW χ^2	1.879		10.224		0.086	
	Bonferroni	–		a–b, a–c		–	
Gender of the player	Female	3.83 ± 1.15	0.351	3.63 ± 1.31	0.984	3.54 ± 1.44	0.401
	Male	3.00 ± 1.22		3.60 ± 0.89		4.40 ± 2.30	
	Both	3.33 ± 2.08		3.67 ± 1.53		2.67 ± 2.08	
	KW χ^2	2.096		0.031		1.827	

KW χ^2 Kruskal–Wallis test, *CBSS* COVID-19 and breastfeeding specific score, *GQS* global quality score, *SD* standard deviation

*p < 0.05

[a,b,c,d]Subgroup names in the question and used to indicate which group the difference originated

& Peker, 2020; Yüce et al., 2021), contents related to nursing professionals (Carvalho et al., 2021), rheumatic diseases (Kocyigit et al., 2020) food safety (Thomas et al., 2021), andrology (Demir et al., 2021), and children's information (Azak et al., 2022). After the COVID-19 pandemic occurred, many mothers utilized YouTube videos to search for information about breastfeeding. The present study is the first to focus on the content, reliability, and quality of YouTube videos about breastfeeding during the COVID-19 pandemic. Our aim was to better understand what aspects of YouTube videos on COVID-19 and breastfeeding.

In planning this study, we considered the search terms most likely to be used by breastfeeding mothers. We conducted the screening more than one year after the announcement of the pandemic to include as many videos as possible on breastfeeding and COVID-19. In some previous studies, the researchers limited YouTube video selection according to upload dates, view counts, and ratings (Li et al., 2020; Ramírez et al., 2020). However, the majority of people

conducting a search of YouTube do not take such factors into account. Therefore, limiting video selection according to factors, such as upload dates, view counts, and ratings, will not accurately represent viewers' selections (Yüce et al., 2021). The videos included in the present study were obtained by searching for keywords using a new user registration, without any limitation on video sorting.

When we examined the contents of the videos included in this study, 72.1% (n = 31) were informative, and 25.6% (n = 11) were not informative. The videos grouped as informative scored significantly higher (DISCERN, GQS, and CBS) than the videos grouped as not informative. A study analyzed YouTube videos about COVID-19 and pregnancy (Yuksel & Cakmak, 2020). Similar to this research, they categorized most of the videos as informative. However, unlike this research, they found that the DISCERN scores of the videos were low (Yuksel & Cakmak, 2020).

A previous study conducted in Turkey reported that most YouTube videos on COVID-19 and pregnancy were

Table 4 Correlation analysis of the data

Variables		Type	Region	Likes	Dislikes	Comments	Days	Lengths	Views	Sources	Who took part in the videos	Gender	DISCERN	GQS	CBSS
Type	r	1													
	p	–													
Region	r	– 0.225	1												
	p	0.194	–												
Likes	r	0.035	0.444	1											
	p	0.823	0.008**	–											
Dislikes	r	– 0.108	– 0.164	0.338	1										
	p	0.490	0.346	0.027*	–										
Comments	r	0.174	0.054	0.537	0.098	1									
	p	0.264	0759	0.000**	0.533	–									
Days	r	– 0.039	0.317	0.103	– 0.190	0.111	1								
	p	0.802	0.064	0.512	0.233	0.477	–								
Lengths	r	0.067	0.277	– 0.609	– 0.322	– 0.128	– 0.067	1							
	p	0.669	0.108	0.661	0.036*	0.415	0.668	–							
Views	r	– 0.212	0.215	0.439	0.552	0.145	0.182	– 0.373	1						
	p	0.171	0.216	0.003**	0.000**	0.353	0.243	0.014*	–						
Sources	r	0.160	– 0.125	– 0.387	0.025	– 0.039	– 0.125	0.093	– 0.089	1					
	p	0306	0.474	0.010*	0.876	0.806	0.425	0.554	0.570	–					
Who took part in the videos	r	– 0.178	0.020	– 0.148	0.045	– 0.136	0.041	– 0.190	0.006	0.072	1				
	p	0.253	0.911	0.344	0.775	0.385	0.792	0.223	0.971	0.645	–				
Gender	r	0.065	0.289	0.064	0.129	0.074	0.147	0.004	0.221	0.406	– 0.120	1			
	p	0.678	0.092	0.682	0.409	0.635	0.347	0.977	0.154	0.007**	0.445	–			
DISCERN	r	– 0.366	– 0.055	0.031	0.105	– 0.190	– 0.226	0.018	0.137	– 0.368	0.066	– 0.192	1		
	p	0.016*	0.753	0.843	0.504	0.222	0.146	0.910	0.380	0.015*	0.674	0.218	–		
GQS	r	– 0.550	0.247	0.078	0.078	– 0.081	– 0.069	– 0.028	0.168	– 0.122	0.455	– 0.018	0.640	1	
	p	0.000**	0.153	0.621	0.621	0.604	0661	0.859	0.283	0436	0.002**	0.909	0.000**	–	
CBSS	r	– 0.235	0.189	0.131	0.169	– 0.113	0.006	0.001	0.266	– 0.296	0.119	– 0.040	0.276	0.260	1
	p	0.130	0.277	0.402	0.278	0.471	0.969	0.997	0.085	0.054	0.447	0.797	0.073	0.092	–

CBSS COVID-19 and breastfeeding specific score, *GQS* Global quality score

Spearman's correlation test, *p < 0.05

Table 5 Interobserver RELIABILITY of the DISCERN, GQS and CBSS scores

	Mean ± SD	Median (Min–Max)		Median (Min–Max)	Median ± SD		
	DISCERN 1			DISCERN 2		r*; P	Cronbach Alpha
	3.69 ± 1.22	4.00 (1–5)		3.67 ± 1.18	4.00 (1–5)	0.889; 0.000	0.869
	GQS 1			GQS 2			
	3.62 ± 1.25	4.00 (1–5)		3.81 ± 1.15	4.00 (1–5)	0.793; 0.000	0.808
	CBSS 1			CBSS 2			
	4.36 ± 1.79	6.00 (1–7)		4.93 ± 1.81	5. (2–7)	0.779; 0.000	0.797

There was a high level of compliance between the 2 researchers in terms of DISCERN, GQS and CBSS Scores scores (respectively Cronbach Alpha 0.869; 0.808; 0.797)

CBSS COVID-19 and breastfeeding specific score, *GQS* Global quality score, *min* minimum, *max* maximum; *SD* standard deviation

*Spearman's correlation coefficient

uploaded by individuals and physicians, similar to this research (Yuksel & Cakmak, 2020). Demir et al. (2021) reported that videos related to COVID-19 and andrology were featured by healthcare professionals, similar to this research. In the present study, the videos featured by parents received a significantly lower GQS than videos featured by physicians and other health professionals. Similarly, Sahin et al. (2019) reported that YouTube videos featured by individuals were of lower quality than videos featured by health care professionals. Demir et al. also reported that the GQSs of the videos uploaded by physicians were higher than those uploaded by non-health care professionals (Demir et al., 2021). Educational videos published by government and professional agencies can low viewing rates. These videos tend to be long and slow moving, and they use formal language (Brame, 2016). The low viewing rates may also be linked to the way in which YouTube sorts videos, recommending videos with the most views to users, which further increases the viewing figures of these videos.

The importance of YouTube as a platform for disseminating information became clear during the Ebola and Zika virus pandemics, when informative videos were created and watched by many people (Basch et al., 2015, 2017). Globally, the COVID-19 pandemic has captured the attention of social media users. In comparison with previous outbreaks, such as Ebola, Zika, and H1N1, viewer numbers of content related to the COVID-19 pandemic appear to be higher (Bora et al., 2018; Nagpal et al., 2015; Pandey et al., 2010). This study analyzed YouTube videos published on a specific topic: breastfeeding and COVID-19. We found that the total number of views (*n* = 210,816 views) of the videos included in the study was low. This finding is in accordance with that of a study on COVID-19 and andrology in which videos with good-quality, reliable content had few views and likes (Demir et al., 2021). Another study on COVID-19 and pregnancy reported that videos created by news channels were the most watched, although the DISCERN scores for

these videos were low (Yuksel & Cakmak, 2020). Therefore, popularity (views and likes) alone does not seem to be an appropriate measure for estimating YouTube video content quality.

Implications

YouTube is a quick and easily accessible information source, which is used by many people today. Nurses need to be aware of the usefulness of social media platforms, such as YouTube, as a means of disseminating important health-related information. Nurses in obstetrics, gynecological, and neonatal fields, individually and with a team, could create and post YouTube videos containing information on health-related topics. As the current COVID-19 pandemic worsens, nurses need to use YouTube to deliver quality content and minimize the spread of misinformation. The creation by nurses and other health care professionals of quality YouTube content on COVID-19 and breastfeeding and additional health-related information would minimize the spread of misinformation The creation by nurses and other health care professionals of quality YouTube content on COVID-19 and breastfeeding and additional health-related information would minimize the spread of misinformation. For YouTube videos on breastfeeding during the COVID-19 pandemic to become an accepted source of information, the content of these videos will need to be improved and standardized with respect to their quality and reliability.

Limitations

This study has some limitations. This was a cross-sectional study, and the data were collected at one time point only. As the content on YouTube is dynamic, the results of this study offer time-sensitive information, like other studies based on YouTube content. In addition, only YouTube videos in

English were included in this study. Furthermore, the demographic characteristics of the video viewers are unknown. As there were no published studies on YouTube content on breastfeeding during the COVID-19 pandemic, we could not compare our results with those of similar studies.

Conclusions

The majority (72.1%) of the 43 videos included in the study were informative. The level of interobserver agreement was "almost perfect." In terms of the video origins, most had been uploaded in the U.S., and most had been created by news agencies or physicians. Using the DISCERN tool, 32.6% of videos scored 5 points, and 37.2% of videos scored 5 points using the GQS tool. Videos grouped as informative scored significantly higher (DISCERN, GQS, and CBS) than those grouped as misleading. The GQSs for the videos featuring parents were significantly lower than those for the videos featuring physicians or other health care professionals.

During the COVID-19 pandemic, YouTube videos served as an essential and easily accessible source of information about breastfeeding for mothers concerned about various aspects of the disease. This study showed that videos on breastfeeding and COVID-19 have high view rates but low quality and low reliability. The information content of YouTube videos needs to be improved and standardized before the videos can be considered a reliable source of information about COVID-19 and its effects on breastfeeding. We recommend that future studies evaluate the quality of videos published on online platforms other than YouTube about breastfeeding during the COVID-19 pandemic. In addition, digital literacy needs to be improved. Improving the quality of online videos and information content will help to address gaps in health literacy, including gaps relating to breastfeeding and COVID-19.

Declarations

References

ACOG. (2021). *Barriers to breastfeeding: Supporting initiation and continuation of breastfeeding* (No. 821). https://www.acog.org/clinical/clinical-guidance/committee-opinion/articles/2021/02/barriers-to-breastfeeding-supporting-initiation-and-continuation-of-breastfeeding

Azak, M., Şahin, K., Korkmaz, N., & Yıldız, S. (2022). YouTube as a source of information about COVID-19 for children: Content quality, reliability, and audience participation analysis. *Journal of Pediatric Nursing, 62*, e38. https://doi.org/10.1016/J.PEDN.2021.06.024

Basch, C. H., Basch, C. E., Ruggles, K. V., & Hammond, R. (2015). Coverage of the Ebola virus disease epidemic on YouTube. *Disaster Medicine and Public Health Preparedness, 9*(5), 531–535. https://doi.org/10.1017/dmp.2015.77

Basch, C. H., Fung, I. C. H., Hammond, R. N., Blankenship, E. B., Tse, Z. T. H., Fu, K. W., Ip, P., & Basch, C. E. (2017). Zika virus on YouTube: An analysis of English-language video content by source. *Journal of Preventive Medicine and Public Health, 50*(2), 133–140. https://doi.org/10.3961/jpmph.16.107

Basch, C. H., Hillyer, G. C., Meleo-Erwin, Z. C., Jaime, C., Mohlman, J., & Basch, C. E. (2020). Preventive behaviors conveyed on YouTube to mitigate transmission of COVID-19: Cross-sectional study. *JMIR Public Health and Surveillance*. https://doi.org/10.2196/18807

Beck, F., Richard, J. B., Nguyen-Thanh, V., Montagni, I., Parizot, I., & Renahy, E. (2014). Use of the internet as a health information resource among French young adults: Results from a nationally representative survey. *Journal of Medical Internet Research*. https://doi.org/10.2196/jmir.2934

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. *American Journal of Gastroenterology, 102*(9), 2070–2077. https://doi.org/10.1111/j.1572-0241.2007.01325.x

Bora, K., Das, D., Barman, B., & Borah, P. (2018). Are internet videos useful sources of information during global public health emergencies? A case study of YouTube videos during the 2015–16 Zika virus pandemic. *Pathogens and Global Health, 112*(6), 320–328. https://doi.org/10.1080/20477724.2018.1507784

Brame, C. J. (2016). Effective educational videos: Principles and guidelines for maximizing student learning from video content. *CBE Life Sciences Education*. https://doi.org/10.1187/CBE.16-03-0125

Carvalho, E. S. S., Dovale, P. R. L. F., Pinto, K. A., & Ferreira, S. L. (2021). Contents related to nursing professionals during the COVID-19 pandemic on the Youtube™ platform. *Revista Brasileira De Enfermagem*. https://doi.org/10.1590/0034-7167-2020-05814

CDC. (2021). *Breastfeeding*. https://www.cdc.gov/breastfeeding/index.htm

Charnock, D., Shepperd, S., Needham, G., & Gann, R. (1999). DISCERN: An instrument for judging the quality of written consumer health information on treatment choices. *Journal of Epidemiology and Community Health, 53*(2), 105–111. https://doi.org/10.1136/jech.53.2.105

Chen, D., Yang, H., Cao, Y., Cheng, W., Duan, T., Fan, C., Fan, S., Feng, L., Gao, Y., He, F., He, J., Hu, Y., Jiang, Y., Li, Y., Li, J., Li, X., Li, X., Lin, K., & Liu, C. (2020). Expert consensus for managing pregnant women and neonates born to mothers with suspected or confirmed novel coronavirus (COVID-19) infection. *International Journal of Gynecology and Obstetrics, 149*(2), 130–136. https://doi.org/10.1002/ijgo.13146

Cheng, X., Dale, C., & Liu, J. (2007). *Understanding the Characteristics of Internet Short Video Sharing: YouTube as a Case Study*.

D'Souza, R. S., D'Souza, S., Strand, N., Anderson, A., Vogt, M. N. P., & Olatoye, O. (2020). YouTube as a source of medical information on the novel coronavirus 2019 disease (COVID-19) pandemic. *Global Public Health, 15*(7), 935–942. https://doi.org/10.1080/17441692.2020.1761426

Demir, M., Taken, K., Eryilmaz, R., Aslan, R., & Ertas, K. (2021). YouTube as a health information source: COVID-19 and andrology. *Medical Bulletin of Haseki, 59*(2), 91–95. https://doi.org/10.4274/haseki.galenos.2021.6925

Drozd, B., Couvillon, E., & Suarez, A. (2018). Medical YouTube videos and methods of evaluation: Literature review. *In Journal of Medical Internet Research.* https://doi.org/10.2196/mededu.8527

Fan, C., Lei, D., Fang, C., Li, C., Wang, M., Liu, Y., Bao, Y., Sun, Y., Huang, J., Guo, Y., Yu, Y., & Wang, S. (2020). Perinatal transmission of COVID-19 associated SARS-CoV-2: Should we worry? *Clinical Infectious Diseases: an Official Publication of the Infectious Diseases Society of America.* https://doi.org/10.1093/cid/ciaa226

Kocyigit, B. F., Akaltun, M. S., & Sahin, A. R. (2020). YouTube as a source of information on COVID-19 and rheumatic disease link. *Clinical Rheumatology, 39*(7), 2049–2054. https://doi.org/10.1007/s10067-020-05176-3

Li, H. O. Y., Bailey, A., Huynh, D., & Chan, J. (2020). YouTube as a source of information on COVID-19: A pandemic of misinformation? *BMJ Global Health, 5*, e002604. https://doi.org/10.1136/bmjgh-2020-002604

Nagpal, S. J. S., Karimianpour, A., Mukhija, D., Mohan, D., & Brateanu, A. (2015). YouTube videos as a source of medical information during the Ebola hemorrhagic fever epidemic. *Springerplus, 4*(1), 1–5. https://doi.org/10.1186/s40064-015-1251-9

Ozdede, M., & Peker, I. (2020). Analysis of dentistry YouTube videos related to covid-19. *Brazilian Dental Journal, 31*(4), 392–398. https://doi.org/10.1590/0103-6440202003767

Pandey, A., Patni, N., Singh, M., Sood, A., & Singh, G. (2010). YouTube as a source of Information on the H1N1 Influenza Pandemic. *American Journal of Preventive Medicine.* https://doi.org/10.1016/j.amepre.2009.11.007

Ramírez, M. G., de Rojas, R. G., & Martínez, A. A. (2020). Youtube and coronavirus: Analysis of video consumption on the Covid-19 pandemic. *Revista Latina De Comunicacion Social, 2020*(78), 121–153. https://doi.org/10.4185/RLCS-2020-1471

Rice, K., & Williams, S. (2021). Women's postpartum experiences in Canada during the COVID-19 pandemic: A qualitative study. *CMAJ Open, 9*(2), E556–E562. https://doi.org/10.9778/CMAJO.20210008

Şahin, A., Şahin, M., & Türkcü, F. M. (2019). YouTube as a source of information in retinopathy of prematurity. *Irish Journal of Medical Science, 188*(2), 613–617. https://doi.org/10.1007/s11845-018-1902-2

Stuebe, A. (2020). Should infants be separated from mothers with COVID-19? First do no harm. *Breastfeeding Medicine.* https://doi.org/10.1089/bfm.2020.29153.ams

Szmuda, T., Syed, M. T., Singh, A., Ali, S., Özdemir, C., & Słoniewski, P. (2020). YouTube as a source of patient information for coronavirus disease (COVID-19): A content-quality and audience engagement analysis. *Reviews in Medical Virology.* https://doi.org/10.1002/rmv.2132

Thomas, M., Haynes, P., Archila, J., Nguyen, M., Xu, W., & Feng, Y. (2021). Exploring food safety messages in an era of COVID-19: Analysis of YouTube video content. *Journal of Food Protection.* https://doi.org/10.4315/JFP-20-463

UNICEF. (2022, July 25). *Breastfeeding safely during the COVID-19 pandemic.* https://www.unicef.org/coronavirus/breastfeeding-safely-during-covid-19-pandemic

WHO. (2020a). *Infant and young child feeding.* https://www.who.int/news-room/fact-sheets/detail/infant-and-young-child-feeding

WHO. (2020b). *Coronavirus disease (COVID-19): Breastfeeding.* Coronavirus disease (COVID-19): Breastfeeding. https://www.who.int/news-room/q-a-detail/coronavirus-disease-covid-19-breastfeeding

WHO. (2020c). *WHO Director-General's opening remarks at the media briefing on COVID-19 - 11 May 2020c.* https://www.who.int/director-general/speeches/detail/who-director-general-s-opening-remarks-at-the-media-briefing-on-covid-19---11-may-2020c

Yüce, M. Ö., Adalı, E., & Kanmaz, B. (2021). An analysis of YouTube videos as educational resources for dental practitioners to prevent the spread of COVID-19. *Irish Journal of Medical Science, 190*(1), 19–26. https://doi.org/10.1007/s11845-020-02312-5

Yuksel, B., & Cakmak, K. (2020). Healthcare information on YouTube: Pregnancy and COVID-19. *International Journal of Gynecology and Obstetrics, 150*(2), 189–193. https://doi.org/10.1002/ijgo.13246