Is Youtube Effective On Covid-19 Vaccination During Pregnancy?

Youtube Gebelik Döneminde Covid 19 Aşılaması Üzerine Etkili mi?

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Abstract

Aim — YouTube® is one of the most frequently used social media platforms worldwide. The quality of the videos is of utmost significance in terms of the accurate information for pregnant women and in the diagnosis, treatment, and prevention of life-threatening diseases such as COVID-19. This study aimed to evaluate the content and quality of YouTube videos that pregnant women make use of as a source of information for covid-19 vaccines.

Material and Method — A search was made on YouTube with the keywords and phrases such as "pregnancy and covid vaccination", "is the covid vaccine risky in pregnancy?". A total of 54 videos in English were analyzed. Video sources were divided into 5 groups hospitals, professional medical chambers, pregnant women, physicians and news channels. The quality of the contents was evaluated with DISCERN, GQS and the pregnancy covid vaccine index (CVI) we have developed for this purpose.

Results — Of these videos, we have detected that 20 (37%) were shared by hospitals, 5 (9%) were shared by physicians, 5 (9%) were shared by pregnant women, 22 (41%) were shared by news programs or news program hosts, and 2 (4%) were shared by medical chambers. The mean DISCERN score was 33.2 ± 17. The pregnant group was significantly different from the other groups in terms of GQS (p=0.048). There was no significant difference between the groups in terms of covid vaccination index during pregnancy (p= 0.501).

Conclusion — This study revealed that there is an urgent need to regulate the content of videos according to the medical guideline.

Keywords — COVİD-19, pregnancy, vaccination, YouTube

Özet

Amaç — YouTube® dünya çapında en sık kullanılan sosyal medya platformlarından biridir. Videoların kalitesi, hamile kadınlara doğru bilgi verilmesi ve COVID-19 gibi hayatı tehdit eden hastalıkların teşhisi, tedavisi ve önlenmesi açısından son derece önemlidir. Bu çalışma, hamile kadınların covid-19 aşıları için bilgi kaynağı olarak kullandığı YouTube videolarının içerik ve kalitesini değerlendirmeyi amaçlamıştır.

Gereç ve Yöntem — YouTube'da "hamilelik ve covid aşısı", "covid aşısı gebelikte riskli midir?" gibi anahtar kelime ve ifadelerle arama yapıldı. Toplam 54 İngilizce video analiz edildi. Video kaynakları hastaneler, meslek odaları, hamileler, doktorlar ve haber kanalları olarak 5 gruba ayrıldı. İçeriklerin kalitesi DISCERN, GQS ve bu amaçla geliştirdiğimiz gebelik covid aşı indeksi (CAI) ile değerlendirilmiştir

Sonuçlar — Bu videolardan 20'sinin (%37) hastaneler tarafından, 5'inin (% 9) doktorlar tarafından, 5'i (%9) hamile kadınlar tarafından, 22'si (%41) haber programları veya haber programı sunucuları tarafından ve 2'si (%4) tabip odaları tarafından paylaşılmıştır. Ortalama DISCERN skoru 33.2±17 idi. Gebe grup GQS açısından diğer gruplardan anlamlı olarak farklıydı (p=0.048). Gruplar arasında gebelikte covid aşı indeksi açısından anlamlı fark bulunmadı (p= 0,501).

Sonuç — Bu çalışma, videoların içeriklerinin takip eden kişiler için acilen tıbbi kılavuza göre düzenlenmesi gerektiğini ortaya koydu

Anahtar Kelimeler — COVİD-19, gebelik, aşı, YouTube

INTRODUCTION

Today, many people make use of online systems to obtain health information. In this regard, YouTube is the second most used source of information throughout the world. Although its reliability has been tested and verified concerning many health-related issues, no evaluation has been made concerning the videos of COVİD-19 vaccination during pregnancy[1,2]. Covid -19 was declared a pandemic on March 11, 2020, and had caused significant morbidity and mortality worldwide[3].

During the current covid 19 infection, the impacts on pregnant women, fetuses, and infants were uncertain and undetermined at the beginning[4]. Although there are small-scaled studies which had been conducted demonstrating that it causes an increase in preterm birth, cesarean section delivery rates and intensive care unit admissions, its impacts within the scope of miscarriage, stillbirth, intrauterine growth retardation, long-term effects and neuro-developmental side effects remained unanswered. A systematic multi-national review of 60 studies on SARS-CoV-2 in pregnancy reported that severe illness occurred in up to 18% of pregnant patients and critical disease complicated up to 5% of cases, comparable to rates in the general population[5]. While vaccine studies were initiated for the Covid 19 pandemic, pregnant women were excluded from the clinical study according to the traditional approach due to the fear of fetal side effects. There is negligible data available on the safety and efficacy of the vaccine in pregnancy, as vaccine companies exclude pregnant women from their phase studies. Considering the heavy burden and severity of the disease all pregnant women should be recommended to be vaccinated. It is not quite a correct approach to expect a different side effect from the non-pregnant population with respect to mRNA vaccines which have never been experienced before.[6-8]

 In this study, we aimed to evaluate the quality and reliability of the informative role of social media with respect to these concerns while evaluating the anxious concerns we have while giving information about vaccination during the COVID 19 pandemic period to pregnant women who applied to our outpatient clinic.

METHODS

In September 2021, "pregnancy and covid vaccination" and "does covid vaccine bear risks in pregnancy" were scanned on YouTube (http://www.youtube.com). Duplicate videos, non-English videos, non-related content, videos that were included because only the keywords namely covid and pregnancy were excluded by using the YouTube filtering system. As a result of this scanning, 77 videos were reduced to 54 videos in total and an evaluation was made. A total of 54 videos were evaluated by two independent obstetricians and gynecologists (Ş.D. and F.A.). For each video, first of all the uploading users or institutions were taken into consideration and then they were divided into 5 groups as hospitals (A), professional medical chambers (B), pregnant women (C), physicians (D) and news channels (E). The date of publication of all videos, the number of views, the duration of the video, the number of likes and dislikes, and the number of comments were recorded. The proficiency and quality of the videos were evaluated using DISCERN and the Global Quality Scale (GQS). DISCERN is a scoring method consisting of a total of sixteen questions, scored from 1 to 5, and evaluated with a minimum of 16 and a maximum of 80 points (high quality). According to this method of scoring, 64-80 points are deemed excellent, 52-63 points are deemed good, 41-51 points are deemed poor, 30-40 points are deemed bad, 16-29 points are deemed very bad. The GQS uses a 5-point scale (1 to 5) to rate the overall quality of the video, based on the value of the information and how useful the reviewer thought the particular video would be to a patient . One point was scored to represent low quality (most of the information is missing, not useful for viewers at all) and 5 points to high quality (beneficial for viewers)[9]. There is no reliable video scoring system available which is specific to covid vaccination during pregnancy. In this study, we scored all videos by creating an index of covid vaccination in pregnancy

(CVI). Within the scope of this scoring, provided that the vaccine side effects, safety, non-teratogenicity, formation of fetal and maternal antibodies, the risks of covid disease in pregnancy, vaccination in pregnant women who previously had covid, the number of doses to be made, the authorized vaccine brand recommendation and the suitable trimester during which vaccination may be administered is mentioned, the videos were rated as 1 corresponding to each question whereas the videos in which such questions were not made mention of were rated as 0. For the video that answered all questions, 9 points had been given whereas for the video that did not answer the mentioned questions at all had been given 0 points (Table 1). We did not apply to any medical ethics committee for approval of this study, according to the Declaration of Helsinki of the World Medical Association, because no patient data or material was used and all videos used for the study were available on a public social media website (YouTube).

Table 1. Index of covid vaccination in pregnancy (CVI)	
Parameters	Value
side effect	1
safety	1
teratogenıcıty	1
formatıon of fetal maternal antıbodıes	1
rısks of covıd dısease	1
vaccınatıon of pregnant women who prevıously had covıd	1
number of vaccıne doses	1
suıtable trımester durıng whıch vaccınatıon may be admınıstered	1
vaccıne brand	1

Statıstıcs Statistical calculations were performed using SPSS version 25 (IBM Corp. Armonk, NY, USA). Categorical values were denoted as frequency, and continuous data were denoted as mean, median, and standard deviation. Shapiro-Wilk test was used to evaluate the normal distribution and the Levene test was used for variance homogeneity. Spearman correlation test was utilized. Kruskal-Wallis and Dunn Bonferroni's post-hoc tests were used for analysis between groups. Inter-rater reliability was determined by Cohen's kappa score (≤0 indicating no agreement, 0.01-0.20 indicating none to slight, 0.21-0.40 as fair, 0.41-0.60 as moderate, 0.61-0.80 substantial, 0.81–1.00 as almost perfect agreement). The correlation was determined as poor (0.00-0.20), fair (0.21-0.40), moderate (0.41-0.60), good (0.61-0.80), or excellent (0.81-1.00) respectively. The significance threshold was acknowledged as $p<0.05$.

RESULTS

A total of 77 videos were encountered regarding pregnancy and covid 19 vaccination. Of these, 54 videos were found suitable for the criteria. All calculations were evaluated over these determined 54 videos. Of these 54 videos, we have detected that 20 (37%) were uploaded by hospitals, 5 (9%) were uploaded by physicians, 5 (9%) were uploaded by pregnant women, 22 (41%) were uploaded by news programs or news program hosts, and 2 (4%) were uploaded by medical chambers. The mean DISCERN score was 33.2±17. Accordingly, five (10%) videos were evaluated as excellent, six(11%) videos were evaluated as good, seven (13%) videos were evaluated as moderate, eight (15%) videos were evaluated as bad, and twenty-eight (51%) videos were evaluated as very bad.

The oldest dated video was added in December 2020, and the latest dated video was added in September 2021. The number of views per video was 19,154,15±31.092 and the total number of views of the videos was 2,068,648. The average number of likes and dislikes per video was 178.46 and 98.22, respectively. The average total video duration in terms of seconds was 331.11 secs. A detailed descriptive analysis of 54 videos is given in Table 2.

According to the analyze between groups (A, B, C, D, E), DISCERN scores were determined as 35.25, 35.40, 20.20, 34.00, 31.50, respectively. Looking at these values, it was seen that the videos were generally weak and of poor quality. There was no significant difference between the groups

Table 2. Video evaluation				
	Mean	Std. Deviation	Minimum	Maximum
Video Seconds	331,11	223,413	25	962
Video Streamıng	98,50	78,277	6	270
Like	178,46	638,325	0	4600
Unlike	,22	308,631	0	1800
Comment	67,31	213,354	0	1385
Number Of Vıews	19154,15	31092,640	13	155900
GQS	2,63	1,138	1	5
DISCERN	33,22	17,475	16	76
CVI	4,33	2,119	1	9
GQS: Global Qalıty Score; CVI: Covid Vaccination Index				

in terms of DISCERN scores, (p= 0.391). Through the instrumentality of the Global Quality Scale, the average score was 2.63 over 5. If we were to analyze between groups (A, B, C, D, E), GQS scores were 3.00, 2.20, 1.40, 2.68, and 2.50, respectively. Group C was significantly different from other groups in terms of GQS (p=0.048). A significant difference was found between the hospital (A) and pregnant women (C) groups in terms of GQS scores (p=0.003). If we were to analyze between groups (A, B, C, D, E), CVI during pregnancy were 4.80, 4.00, 3.00, 4.27, 4.50, respectively. No significant difference was observed between the groups in terms of CVI during pregnancy (p= 0.501) (Table 3 and 4). According to our scoring system, 48.1% of the video contents did not make mention of vaccines' side effects, 48.1% of them did not mention antibody response, 59.3% of them did not mention teratogenicity, 68.5% of them did not mention the number of vaccine doses, 68.5% did not mention the pregnancy trimesters, 88.9% failed to refer to vaccination in those who have previously had covid-19, 55.6% did not mention vaccine types, 55.6% did not mention brand recommendation for vaccination.

According to the reliability analysis (kappa score) for the inter-rater assessment agreement, it was seen that the kappa score for the GQS was 0.926 (p=0.0001), the kappa score for DISCERN was 0.919 (p=0.001), and the kappa score for CVI was 0.915 (p=0.001). It was determined that there was a perfect fit for the CVI scoring system.

Table 3. Comparison of scoring systems with respect to video sources					
Scoring type	Hospital(A) n=20(min-max)	Organization(B) n=2(min-max)	Pregnant(C) n=5(min-max)	Physician(D) n=5(min-max)	News(E) n=22(min-max)	p value
DISCERN	30(16-75)	31.5(16-47)	16(16-27)	38(16-57)	26.5(16-76)	.391
GQS	3 (2-5)	2.5(2-3)	1(1-2)	2(1-4)	3 (1- 5)	.048
CVI	5(1-8)	4.5(2-7)	4(1-5)	3(2-8)	4.5(1-9)	.501
Kruskal-wallis test, median (minimum-maximum) values, GQS: Global Quality Score; CVI: Covid Vaccination Index, GQS and DISCERN scoring systems were in positive correlation with each other (p=0.00).					

Table 4. Correlation Scoring Systems			
	CVI	GQS	DISCERN
CVI	-	,723 (p=.00)	,637(p=.00)
GQS	,723 (p=.00)	-	,792 (p=.00)
DISCERN	,637(p=.00)	,792 (p=.00)	-
GQS: Global Quality Score; CVI: Covid Vaccination Index, GQS and DISCERN scoring systems			

DISCUSSION

The purpose of this research was to evaluate the acquisition of information with the YouTube database, which became more important during the COVID-19 pandemic period. Although there is a YouTube study evaluating 48 videos about the COVID-19 vaccine in the literature, no research has been detected on the COVID-19 vaccine in pregnancy[10].

Within the scope of the COVID-19 vaccine initiative, approximately 150 vaccines have been preclinically studied, but fewer than 50 vaccines have reached and succeeded phase II-III trials.[11] BNT162b2 (Pfizer-BioNTech CO-VID-19 vaccine) was indicated for individuals at 12 years of age and older. But from October 2021 this vaccination was indicated for children between 5 to 11 years old according to FDA. mRNA-1273 (Moderna COVID-19 vaccine) is indicated for individuals 18 years of age and older. Ad26.COV2.S (Janssen COVID-19 vaccine) is indicated for individuals 18 years of age and older. Sinovac's CoronaVac vaccine, on the other hand, has been approved for a wide audience, but there have been concerns about its effectiveness. The choice between COVID-19 vaccines is based on availability and patient preference. Data concerning the safety of COVID-19 vaccines on pregnant women are limited, but in the light of new data, it has been demonstrated that mRNA vaccines are safe with respect to pregnancy[12] The anti-vaccination movement and the opposition to vaccination that we have heard about frequently in recent years, unfortunately, poses a great risk in terms of health all over the world.

This study aims to compare the educational content in YoutTube videos about the administration of COVID-19 vaccines during pregnancy, which is an extremely sensitive subject[13]. The videos about the COVID-19 vaccination during pregnancy on YouTube were evaluated according to the scoring systems that are well known in the literature and that we have adapted for this particular matter[14], 15. The high correlation between DISCERN, GQS and the CVI scoring systems we developed indicates the safe usability of the CVİ scoring system. As new scoring systems developed for YouTube are improved, choosing high-quality content and videos that provide accurate information will become an important part of education for the sake of the health system in the future according to the study conducted by Yüksel et al. YouTube videos are easily accessible COVID-19 information resources for pregnant women. This study demonstrated that videos about pregnancy and COVID-19 have high viewing rates, but they are generally poor in terms of quality and reliability[16] In our study, videos were uploaded mainly by news sources and hospitals. The videos with the lowest quality and insufficient content were those uploaded by pregnant women.

Each passing day, health literacy is increasing through social media.[17] No anti-vaccine video was detected in our study due to the measures taken by youtube in October 2020, "COVID-19 medical information policy". Yet another important feature of YouTube is that it allows even illiterate communities to learn and to get acquainted with new developments[18]. According to statistics, 74% of the global world watches YouTube and as of 2021, YouTube's world user base is approximately 2,240.03 billion users. In the course of the internet age when we are aware that YouTube is such effective, we think that the contents of health-related videos should be informative, scientifically proven and should not allow for misunderstandings. Brendi Drozd et al. have also shown in their study that there is no substantial scoring system developed for the assessment of YouTube videos[19]. The fact that a video is watched by umpteen users or received a large number of comments does not show that it is sufficient in terms of content. No correlation was determined between the length of the videos we evaluated, the number of views, likes and dislikes. There was only a moderate correlation between likes and comments. We did not examine whether the comments were in favor or adverse.

In our study, we found that videos with a high number

of views did not receive higher scores than other videos. When all videos were evaluated with three separate scoring systems, the group with the lowest score consisted of videos uploaded by pregnant women. The greatest difference was seen in the GQS. Since the videos uploaded by pregnant women were few in our study, there may not have been a statistical discrepancy. In the videos evaluated by two physicians (Ş.D. and F.A.), the kappa score was found to be low in terms of DISCERN and GQS systems, while a high agreement level was observed in the CVİ scoring system. Thus we have speculated that the reason for this high agreement level was that the score we developed necessitated quantal responses.

There are certain limitations to our study. Our review of videos uploaded and watched in a short period is one of them. The fact that the subject is on the agenda and the data regarding the COVID-19 vaccine and its use during pregnancy are insufficient at the time of the study may be the reason for the low number of relevant videos. Watching only English videos is also one of the limited aspects of the study. Furthermore, the lack of explicit data about some of the parameters (teratogenicity, etc.) examined in the CVİ scoring system shows that there is a need for new evaluation systems.

In conclusion, incomplete or incorrect information may lead patients to non-scientific treatments and the physician-patient relationship may be seriously damaged. For this reason, it is necessary to critically analyze the quality of health-related videos on YouTube which are very popular and frequently watched. All videos must be audited by experts before they are published.

Disclosure of interest
The authors report no conflict of interest

Author contributions
The authors declare their following contribution to the manuscript: Dr. Şükran Doğru: conception and design, analysis and interpretation of data, article drafting, and accountability for all aspects of the work. Dr. Aslı Altınordu Atcı: acquisition of data, article drafting. Dr. Fatih Akkuş: analysis and interpretation of data, article drafting.

Ethics committee
We did not apply to any medical ethics committee for approval of this study, according to the Declaration of Helsinki of the World Medical Association, because no patient data or material were used and all videos used for the study were available on a public social media website (YouTube).

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