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# Healthcare information on YouTube: Pregnancy and COVID-19

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## Abstract

**Objective**: We aimed to analyze Turkish language videos on YouTube about Coronavirus and pregnancy.

**Methods**: YouTube was searched for the following keywords: "Coronavirus, gebelik," "Coronavirus, Hamilelik," "COVID-19, gebelik" and "COVID-19, hamilelik". All ranking data for each video was recorded, video sources and target audiences were analyzed. Videos were designated as "informative, "misleading" "personal experience" and "news update." The usefulness of the videos were analyzed by DISCERN score and the quality of the content was calculated by MICI score.

**Results**: Seventy-six videos had a total of 1.494.860 views, with 40.849 likes and 575 dislikes. The source of information in informative videos was physicians (73%), and news agencies (20%), and the majority of these targeted patients. The DISCERN score of videos was 2.9 ± 1, 1.6 ± 0.9, and 1.9 ± 0.9 respectively for respectively for the informative group, personal experience group, and news update group. The mean MICI score for informative videos was low and calculated as 5.3 ± 2.8.

**Conclusion**: YouTube videos are easily accessible sources of COVID-19 information for pregnant women. The present study demonstrated that videos about pregnancy and COVID-19 have high view rates, but are generally low in quality and trustworthiness.

**KEYWORDS**

COVID-19; Pandemic; Pregnancy; YouTube

## 1 | INTRODUCTION

The coronavirus infection, originating from Wuhan, China, became an unexpected health crisis and affected almost 4 billion people worldwide. WHO declared a Public Health Emergency of International Concern, caused by a novel coronavirus, COVID-19, and then, on March 11, declared a pandemic.[1] Although the statistics showed the ratio of affected men was higher than women and children, and that older people were especially susceptible, pregnant women became concerned for the safety the fetus, due to their altered immune system and the unknown placental transference of the virus.[2] While it is not thought that pregnancy affects the predisposition to be infected, a series of cases showed increased side effects and prolonged hospital stays in pregnant women.[3]

Turkey announced its first case on March 11 and, from the first day, started to apply strict rules, including transportation restrictions, quarantine rules, and reassigned obstetric polyclinics as pandemic polyclinics. Meanwhile, most hospitals postponed outpatient appointments and recommended that pregnant women stay at home and visit doctors only in emergencies.

Online platforms, social media, and informative videos are increasingly common as sources of information at the present time. Visually presented information is usually preferred to text and audio, so video platforms are a rising trend.[4] YouTube was the first company to introduce video sharing in 2005 and now receives billions of uploads and visits per day.[5] Many of these concern diseases, disasters, and personal experiences. In addition, women use videos to understand the effects of pregnancy on their bodies and how to deal with these daily changes.[6] Research has focused on different conditions and diseases. Kumar et al.[7] analyzed the type of videos shared about the management of hypertension on YouTube, and Bora et al.[8] researched the influence of YouTube videos during the Ebola and Zika virus outbreaks.

Recently, Khatri et al.[9] analyzed the impact of online videos about COVID-19 on the Singaporean population.

As YouTube has no policy of filtering videos according to their potency or effectiveness, there are many videos online, and while some may be useful, others may be misleading.[10] The aim of the present study was to analyze Turkish language videos on YouTube about COVID-19 and pregnancy.

## 2 | MATERIALS AND METHODS

The present observational study was conducted on May 1, 2020. The YouTube website was searched for keywords "Coronavirus, gebelik," "Coronavirus, hamilelik," "COVID-19, gebelik," and "COVID-19, hamilelik." "Hamilelik" and "gebelik" are Turkish translations for the word pregnancy. The search resulted in 133 videos. Videos in the search results in other languages or that had irrelevant content were ignored. Videos shorter than 2 minutes and longer than 15 minutes were excluded. This is because, in video ranking systems, graphs show that videos show an increase in popularity after 2 minutes and reach peak value at 15–16 minutes.[11] The remaining videos were recorded exactly as they appeared in the playlist to ensure that they were investigated homogenously. The playlist was analyzed individually by two independent obstetricians and gynecologists (BY, KC).

After applying this filter, 76 videos were reviewed. Two independent doctors examined the videos, and in case of inconsistency, the videos were re-evaluated. Approval from the Institutional Review Board was not required as YouTube is a public website and the present study did not include any patient data.

As the first step, all ranking data for each video were recorded, including "likes," "dislikes," length of the video, number of comments, number of views, and number of days on YouTube. Sources of videos and target audiences were analyzed; sources were classified as "news agencies," "individual doctors," and "nonprofessional individuals," while targets were grouped as "healthcare providers" and "patients." Videos were categorized as "informative" if they provided scientifically accurate information on epidemiology, etiopathology, symptoms, prevention techniques, lifestyle modifications, and proven treatment modalities, and categorized as "misleading" if they contained information conflicting with current guidelines or included personal propaganda. Videos containing individual experiences of patients with COVID-19 were categorized as "personal experience." News items uploaded by news agencies detailing updated demographic features of the pandemic were named "news update."

DISCERN scores were used to evaluate the usefulness, reliability, and quality of each video.[8] The scale consists of five yes or no questions. All "yes" answers indicate positive aspects and scored 1 point and all "no" answers scored zero points. The possible total scores are in the range of 0–5 (for the scoring table please see File S1).

The Medical Information and Content Index (MICI) scale was used to evaluate the content of the videos.[9,12] The chart shows that scores are awarded 1–5 points for each of five components: prevalence, transmission, clinical symptoms, screening/testing, and treatment outcomes of the disease. The reviewers used the above guidelines to decide the type, efficiency, and quality of videos.

The Statistical Package for the Social Sciences version 22 (SPSS IBM Corp., Armonk, NY, USA) program was used in the analysis of the data. Independent samples t-test was used to compare independent groups, and $\chi^2$ and Fisher exact tests were used to compare categorical data. A post hoc test was used to compute pairwise comparisons. Inter-rater agreement was determined using Cohen kappa score. Quantitative data were expressed as mean ± standard deviation values in the tables. Categorical data were written as frequency (n) and percentages (%). The data were analyzed at a 95% confidence level and it was considered statistically significant if the *P* value was less than 0.05.

## 3 | RESULTS

From a total of 133 videos, 76 were found to be eligible according to the exclusion criteria. Of these, none were classified as misleading. Forty-five videos were classified as "informative," 15 as "personal experience," and 16 as "news update" (Fig. 1).

Seventy-six videos had a total of 1494860 views, with 40849 likes and 575 dislikes. The length of the videos was significantly higher in the informative group compared to the news update group (*P*=0.002). The mean number of days of availability on YouTube were similar across the groups, with no statistical difference (*P*=0.607). The number of likes were relatively higher for the informative group, but this difference was not statistically significant. The sources of information of the informative videos were physicians (73%) and news agencies (20%), and the majority of these targeted patients (Tables 1 and 2).

The views per day were significantly higher for news updates compared to personal experience, but there was no significant difference when compared to the informative group (views for informative videos were 119.7 ± 521.2, for personal videos 34.4 ± 49.2, and for news updates 2450.9 ± 5509.3; *P*=0.023).

The DISCERN scores of videos were 2.9 ± 1, 1.6 ± 0.9, and 1.9 ± 0.9 for the informative group, personal experience group, and news update group, respectively. These results showed statistically higher scores for the informative videos compared to the other two categories (*P*=0.001).

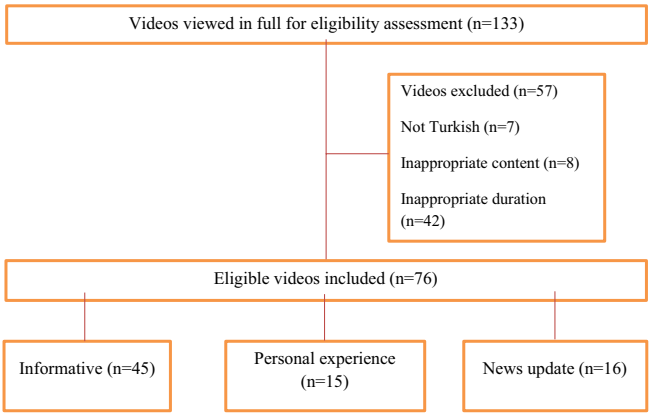


**FIGURE 1** Flowchart of the study.

**TABLE 1** Analyses of video characteristics by usefulness category.[a]

| Characteristics | Informative | Personal experience | News update | *P* |
|---|---|---|---|---|
| Number of videos | 45 | 15 | 16 | |
| Audience interaction parameters | | | | |
| Number of views | 11 483 ± 49 749 | 1199 ± 2083 | 83 517 ± 223 475 | 0.053 |
| Video length (min) | 5.50 ± 3.52 | 3.44 ± 3.06 | 3.34 ± 0.21 | **0.001** |
| Duration on YouTube (days) | 38.7 ± 13.1 | 32.2 ± 13.5 | 24.1 ± 11.9 | 0.607 |
| Views per day | 119.7 ± 521.2 | 34.4 ± 49.2 | 2450.9 ± 5509.3 | **0.002** |
| Likes | 856.9 ± 5510.9 | 44.0 ± 100.3 | 108.4 ± 159.0 | 0.539 |
| Dislikes | 1.7 ± 7.0 | 2.9 ± 6.9 | 30.5 ± 87.9 | 0.078 |
| Comments | 18.8 ± 85.5 | 5.4 ± 14.4 | 76.9 ± 175.9 | 0.388 |
| DISCERN score | 2.9 ± 1.0 | 1.6 ± 0.9 | 1.9 ± 0.9 | **0.001** |
| Source of upload | | | | **0.001** |
| News agencies | 9 (20.0) | — | 11 (68.7) | |
| Academic hospitals | 1 (2.2) | — | — | |
| Government | 1 (2.2) | — | 2 (12.5) | |
| Individual physicians | 33 (73.3) | 1 (6.7) | 2 (12.5) | |
| Patient/individual | 1 (2.2) | 14 (93.4) | 1 (6.2) | |
| Target audience | | | | 0.595 |
| For doctors and healthcare providers | 3 (6.7) | — | 1 (6.2) | |
| For patients | 42 (93.3) | 15 (100.0) | 15 (93.7) | |

Values of $P<0.05$ were considered significant and are marked in bold.
[a]Values are given as number (percentage) or mean ± standard deviation.

**TABLE 2** Pairwise comparisons of video groups according to usefulness.

| | *P* value[a] | | |
|---|---|---|---|
| Characteristics | Informative vs personal experience | Informative vs news update | Personal experience vs news update |
| Video length | 0.069 | **0.002** | 0.567 |
| Views per day | 0.992 | 0.006 | **0.023** |
| DISCERN score | **0.001** | **0.003** | 0.739 |
| Source of upload | **0.001** | 0.460 | **0.001** |

[a]Values of $P<0.05$ were accepted as significant and marked as bold.

The MICI criteria, including transmission and clinical symptoms, were the most detailed contents in videos (91% and 71%, respectively). Moreover, 48.9% of videos mentioned treatment and outcomes, while 35.6% gave information about the prevalence of COVID-19 (Table 3). The mean MICI score for informative videos was 5.3 ± 2.8. The kappa coefficient of agreement regarding the usefulness of the videos was 0.84 ($P<0.001$) and for DISCERN was 0.79 ($P<0.001$).

## 4 | DISCUSSION

All in all, the Turkish language search for COVID-19 and pregnancy on YouTube revealed that most of the videos were uploaded by individual doctors and targeted patients. The majority of the videos were categorized as informative; nevertheless, the DISCERN score was low. This can be explained by a general lack of information worldwide about the management of pregnancy in the COVID-19 pandemic and a lack of agreement on best practice among international health agencies. According to current YouTube statistics, 95% of the global Internet population is watching YouTube.[13] Thus, it is believed that the results of the present study could be generalizable and the design could be used as a template for studies in other languages.

The MICI scores for results from a YouTube search for pregnancy and Coronavirus in the Turkish language were lower compared to previous studies in the literature on searches for chronic and well-known diseases, suggesting that time is needed optimize the quality of the video cumulus on online platforms.[14,15] The component that contributed least to the score was focused on screening and testing of the disease, perhaps reflecting confusion resulting from the authorities' frequent changes in testing recommendations. Even though the DISCERN and MICI scores were found to be at a low level, the popularity of the videos was higher than recorded in previous studies,[8,9] based on the number of views per day. The increasing demand for these videos is (likely) due to the limited number of Turkish language videos, because of the later outbreak of the pandemic in Turkey compared to those in East Asia and Western Europe. In addition, Nagpal et al.[12] argued that when the videos are grouped by popularity, the more informative and higher-quality videos were clustered in the high-ranked group, and they suggested that higher quality resulted

**TABLE 3** Detailed content analysis of informative videos based on MICI scores.[a]

| Component of MICI scale | Videos with information | MICI score |
|---|---|---|
| Prevalence | 16 (35.6) | 0.6 ± 0.9 |
| Transmission | 41 (91.1) | 1.9 ± 0.9 |
| Clinical symptoms | 32 (71.1) | 1.7 ± 1.4 |
| Screening/tests | 9 (20.0) | 0.3 ± 0.6 |
| Treatment/outcomes | 22 (48.9) | 0.9 ± 1.2 |
| Total MICI score | | 5.3 ± 2.8 |

Abbreviation: MICI, Medical Information and Content Index.
[a]Values are given as number (percentage) or mean ± standard deviation.

in higher ranking. This may be the subject of another study about COVID-19 videos.

The present study was designed to compare four main video categories: informative, news updates, personal experience, and misleading, with no videos listed under the final category. The video search studies cite a rate of 10%–30% for inappropriate information.[16] However, Khatri et al.[9] found only two videos that could be classified as misleading in their analysis of all COVID-19 videos on YouTube. They explained this phenomenon in terms of most videos being uploaded by news agencies rather than by individual users. It is believed that the absence of misleading videos in the present study was because of the rapid expansion and extremely serious nature of the outbreak, which made people wary of extreme and exaggerated claims. In addition, it is hypothesized that this pandemic was responsible for encouraging greater trust in the authorities and science-based information.

In today's world, more than 80% of all Americans use Internet searches to access health information.[17] In Turkey, the corresponding figure is 55% of all populations.[18] Pregnancy has always been a major interest on the Internet, as mainly young pregnant women search for information. According to the study conducted by Lagan et al.,[6] 83% of pregnant women stated that Internet-based information affected their decision making. In their unpublished study, Corbett et al.[19] discussed pregnant women's health anxiety and their difficulties in reaching accurate information during the COVID-19 pandemic. In their study, they found that women are also increasingly concerned about their relatives, children, and unborn child, due to fear of the unknown. Thus, it is clear that the information provided on online platforms has to be comprehensible, informative, and scientifically proven.

Even though the present study is the first to analyze the COVID-19 and pregnancy-related videos, it is not without limitations. First, the results cover the videos in Turkish and makes no comparison with corresponding videos in English. In addition, it is still less than 2 months since the first case was announced in Turkey, and it can be expected that subsequent uploads will carry more accurate information about the disease, and thus make the current results less representative.

In conclusion, YouTube videos are easily accessible and important sources of COVID-19 information for pregnant women. The present study demonstrated that videos about pregnancy and COVID-19 have high view rates but are generally low in quality and trustworthiness. Videos on YouTube need improvement and greater standardization before they can be regarded as an effective source of information on COVID-19 and its effects on pregnancy.

## AUTHOR CONTRIBUTIONS

BY contributed to the conception and design, acquisition of data, drafting the manuscript, and revision of the manuscript. KC contributed to the interpretation of data, drafting the manuscript, critical revision of the manuscript, statistical analysis, and supervision.

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## CONFLICTS OF INTEREST

The authors have no conflicts of interest.

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## SUPPORTING INFORMATION

Additional supporting information may be found online in the Supporting Information section at the end of the article.

**File S1**. MICI score table.