Observational Study

Medicine

OPEN

Assessment of information on YouTube on the effect of acupuncture in patients with COVID-19

A cross-sectional study

Min Cheol Chang, MD[a], Yoo Jin Choo, MS[a,*]

Abstract

Medical-related information rapidly spreads throughout the internet. However, these types of information often contain inaccurate information, which can lead to harmful misconceptions. In this study, we evaluated the reliability, quality, and accuracy of videos uploaded on YouTube that harbor claims on the effects of acupuncture on COVID-19 treatment. This is a cross-sectional study. Videos uploaded on YouTube up to February 17, 2022, were searched, and the keywords used were as follows: "acupuncture," "coronavirus," "COVID 19," "COVID-19," "Corona," "COVID," and "SARSCoV2." The top 50 videos in English were viewed and evaluated. The reliability of the videos was evaluated using the modified DISCERN scale, the content-quality was evaluated using the Global Quality Scale. The accuracy of the information in each video was evaluated as well. Of the 50 videos, only 8% were found to be reliable and 64% were of poor quality. Additionally, 98% of the videos were misleading. The mean modified DISCERN scores was 1.72 and the mean Global Quality Scale score was 2.06. Despite the videos being made by experts, their reliability, content-quality, and accuracy were found to be low. The spread of inaccurate information may result in the use of inappropriate and potentially harmful treatment methods for patients. Videos that contain medical information should be produced based on verified scientific evidence.

Abbreviations: COVID-19 = coronavirus disease, GQS = Global Quality Scale, mDISCERN = modified DISCERN.

Keywords: access to information, acupuncture, COVID-19, Internet

1. Introduction

After the first confirmed case of coronavirus disease (COVID-19) in December 2019 in China, COVID-19 rapidly spread worldwide in a span of 2-3 months.[1] As of 2022, the situation continues and the number of deaths continue to rise. Although vaccines against COVID-19 have been developed, it continues to spread owing to the emergence of variants.[2] Patients with COVID-19 present with various symptoms including fever, chills, dyspnea, cough, diarrhea, headache, dizziness, and chest pain.[3] Approximately, 80% of patients with COVID-19 have mild symptoms, and symptomatic treatment is used for these cases. However, 10% to 20% of patients develop severe pneumonia, and hospitalization and intensive care are required to reduce mortality.[4–6] To treat COVID-19, various supportive management strategies and medications have been applied. However, no specific medications for treating COVID-19 have been developed.[7]

Acupuncture is known to enhance immune function and exert anti-inflammatory effects.[8,9] Acupuncture can help manage the symptoms associated with various diseases or illnesses.[8,10] Effective management of the symptoms of COVID-19 using acupuncture has been proposed. However, to date, no clinical trials have been conducted to evaluate the effect of acupuncture in controlling COVID-19 symptoms. Only a few case reports have described the beneficial therapeutic effects of acupuncture in the treatment of COVID-19.[11,12] Therefore, evidence regarding the effects of acupuncture on COVID-19 is lacking.

With the Internet, individuals can now easily access medical information online and learn which medical services are appropriate.[13] People seek advice from medical experts and listen to other patients' experiences through social media. However, medical information available in online multimedia platforms are not always accurate, which may result in incorrect and potentially harmful health decisions from patients.[14] YouTube, the most popular and largest online media-sharing platform, is considered the most important online platform for disseminating medical information.[15]

In this study, we evaluated the reliability, content-quality, and accuracy of the most frequently viewed YouTube videos that contain information on the effects of acupuncture on COVID-19.

The authors have no funding and conflicts of interest to disclose.

All data generated or analyzed during this study are included in this published article [and its supplemental information files]. The data presented in this study are available in Supplementary 1, Supplemental Digital Content 1, http://links.lww.com/MD/H222.

Statement for institutional review board and informed consent were not required for this study.

Supplemental Digital Content is available for this article.

[a] Department of Physical Medicine and Rehabilitation, College of Medicine, Yeungnam University, Daegu, Republic of Korea.

**Correspondence: Yoo Jin Choo, Department of Physical Medicine and Rehabilitation, College of Medicine, Yeungnam University 317-1, Daemyungdong, Namku, Daegu 705-717, Republic of Korea (e-mail: cyj361@hanmail.net).*

How to cite this article: Chang MC, Choo YJ. Assessment of information on YouTube on the effect of acupuncture in patients with COVID-19: A cross-sectional study. Medicine 2022;101:37(e30473).

Received: 17 May 2022 / Received in final form: 1 August 2022 / Accepted: 2 August 2022

http://dx.doi.org/10.1097/MD.0000000000030473

2. Material and Methods

2.1. Video selection

The video included in this cross-sectional study was searched on https://www.youtube.com/ on February 17, 2022, using the following keywords: "acupuncture," "coronavirus," "COVID 19," "COVID-19," "Corona," "COVID," and "SARSCoV2." The YouTube setting was "Global" and no other search filters were used, except that to sort views in descending order. The video selection criteria were as follows: a video that contains information on the effect of acupuncture for COVID-19 treatment and a video that uses English language as a medium. The exclusion criteria were as follows: off-topic videos such as a hospital or a clinic promotional and video that contains no audio. The 50 most-viewed videos fulfilling these criteria were included in this review. This study did not require ethics committee approval, as it did not involve human participants and the videos were publicly accessible.

2.2. Data extraction

We extracted the data from each video. The data included the title, production source, duration of upload on YouTube, video length, and total number of views, likes, and subscribers of the uploader. The video production source was categorized as hospital or professional (hospital or treatment clinic, or a professional such as a clinician), television or internet-based news or programs, or videos by patients (clips uploaded by an individual without any professional affiliation).

2.3. Assessment of reliability, content-quality, and accuracy

The reliability of the video content was assessed using the modified DISCERN (mDISCERN) scale, adapted from the original DISCERN for the assessment of written health information by Charnock et al.[14] The mDISCERN scale includes the following 5 questions: Are the aims clear and achieved?; Are reliable sources of information used?; Is the information presented balanced or unbiased?; Are additional sources of information listed for patient reference?; and Are areas of uncertainty mentioned? The higher the mDISCERN score, the higher is the reliability of the video content. For the mDISCERN, a score of 3 or more and that <2 was considered reliable and unreliable, respectively.

The Global Quality Scale (GQS) was used to evaluate the overall content-quality of video content.[16] This evaluation tool was originally developed to assess website resources and evaluate the flow and ease of use of the information present online. The content-quality of information can be classified using the GQS as follows: poor quality, poor flow, most information missing, hence unhelpful; generally poor quality and poor flow, some information listed but many important topics missing, hence of very limited use; moderate quality, suboptimal flow, and some important information is adequately discussed; good quality and generally good flow, and most relevant information is listed, hence useful; and excellent quality and excellent flow, hence very useful. A higher GQS score indicates a greater content-quality of information.

Each video was classified as accurate, misleading, or both inaccurate and misleading. If the video does not contain any incorrect scientific statement, it was classified as an accurate video, and if it contained at least 1 incorrect scientific statement, it was classified as a misleading video. If the videos had no scientific information, they were considered both inaccurate and misleading. Two reviewers (Y.J.C. and M.C.C.) evaluated the reliability, content-quality, and accuracy of the selected videos, and any discrepancies in assessment were discussed until consensus was reached.

2.4. Statistical analysis

Statistical Product and Service Solutions, version 22 (IBM, Armonk, NY, USA) was used for statistical analysis. The Mann–Whitney *U* test was used to evaluate statistically significant differences in the general features and assessment results of the videos of the groups categorized according to the production sources. In addition, the Mann–Whitney *U* test was used to compare videos with mDISCERN scores ≥3 and <3, between videos with moderate to excellent quality (GQS ≥ 3) and poor quality (GQS < 3), and between accurate videos and misleading videos. Statistical significance was set at *P* value of <.05.

3. Results

Of a total of 144 videos, 50 that met the selection criteria were selected for review (Fig. 1). The general features (production source, duration of upload on YouTube, video length, and total number of views, likes, and subscribers of the uploader) and assessment results (mDISCERN and GQS scores) of the selected videos are presented in Table 1. The web address, titles of the videos on YouTube, and detailed data are presented in Supplementary 1, Supplemental Digital Content 1, http://links.lww.com/MD/H222. Of the 50 videos, 44 were produced by hospitals or professionals, 5 by television or internet-based news or programs, and 1 by a patient. The average mDISCERN score for the included 50 videos was 1.72 ± 0.76. Of these videos, only 16% (n = 8) contained highly reliable information (≥3 mDISCERN). The distribution of the videos according to mDISCERN scores was as follows: 5 points, n = 0; 4 points, n = 0; 3 points, n = 8; 2 points, n = 21; 1 point, n = 20; and 0 point, n = 1. Regarding the assessment of information quality, the average GQS score of the included videos was 2.06 ± 0.82, and the video distribution according to the GQS score was as follows: score 1, n = 15; score 2, n = 17; score 3, n = 18; score 4, n = 0; score 5, n = 0. In addition, only 1 video was classified as accurate, and the remaining 49 videos were classified as misleading.

The videos were compared using the Mann–Whitney *U* test for general characteristics by production source. The videos were analyzed by dividing them into videos produced by experts (hospital and professional) and videos produced by non-experts (television- or Internet-based news or programs, and patients). The length of videos produced by experts were significantly longer than those produced by non-experts (*P* = .01) (Table 2). The number of subscribers of the uploader was lower among videos produced by experts than for those produced by non-experts (*P* = .01). The GQS score was higher for videos produced by experts than for those produced by non-experts (*P* = .01). However, there were no significant differences regarding duration of upload on YouTube (*P* = .45), number of views (*P* = .22), number of likes (*P* = .28), mDISCERN score (*P* = .37), and accuracy (*P* = .76).

The Mann–Whitney *U* test analysis of videos with mDISCERN scores ≥3 and <3 did not show a significant difference regarding the duration of upload on YouTube (*P* = .65), video length (*P* = .99), number of views (*P* = .73), number of likes (*P* = .71), and number of subscribers of the uploader (*P* = 1.00) (Table 3). In addition, the Mann–Whitney *U* test analysis of videos with moderate to excellent quality (GQS ≥ 3) and poor quality (GQS < 3) did not show a significant difference in the number of views (*P* = .27) or the number of subscribers of the uploader (*P* = .58). However, in videos with GQS < 3, the duration of upload on YouTube was longer (*P* = .003) and the number of likes was higher (*P* = .03) than in videos with GQS ≥ 3. The video length was longer for GQS ≥ 3 (*P* < .001). In the comparison between accurate videos and misleading videos, no significant difference was observed using the Mann–Whitney *U* test (duration of upload on YouTube, *P* = .40; video length, *P* = .96; number of views, *P* = .16; number of likes, *P* = .30; number of subscribers of the uploader, *P* = .35) (Table 3).

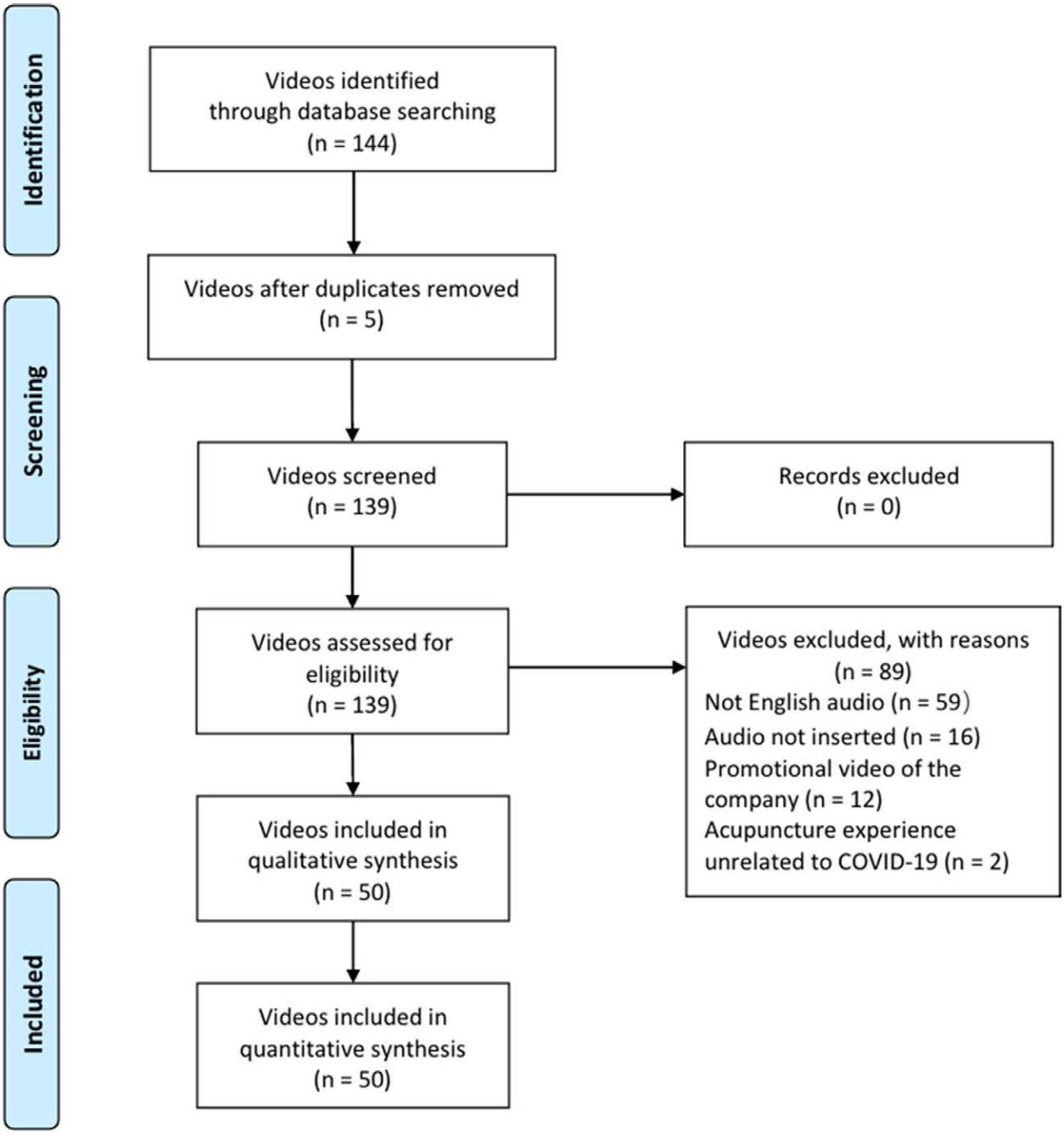

Figure 1. Flow diagram showing the process for the identification and selection of eligible videos.

Table 1

General features and results of the assessment of the videos.

Video features	Mean ± SD (Min, Max)
Duration of upload on YouTube (mo)	15.6 ± 6.42 (3, 25)
Video length (s)	1811 ± 2041 (58, 8188)
Number of views (n)	30,228 ± 206,222 (80, 1,459,227)
Number of likes (n)	350 ± 2259 (0, 16,000)
Number of subscribers of the uploader (n)	192,047 ± 653,160 (0, 2,700,000)
mDISCERN score	1.72 ± 0.76 (0, 3)
GQS score	2.06 ± 0.82 (1, 3)

4. Discussion

Our study reviewed the top 50 videos on the effectiveness of acupuncture in the treatment of COVID-19. Of these, 92% were found to be unreliable, 64% were of poor quality, and 98% were misleading. Therefore, there are serious concerns regarding the reliability, content-quality, and accuracy of the 50 most-viewed videos on YouTube regarding the effectiveness of acupuncture on COVID-19.

To date, previous studies have shown that acupuncture helps improve the symptoms of viral pneumonia;[17,18] however, there are no systematically designed clinical studies implemented on the question of effectiveness of acupuncture on COVID-19 treatment. Only a few case reports have reported on the positive

Table 2

Comparison of the general features and results of the assessment of the videos among the groups according to production sources.

Variables	Video produced by experts (hospitals or professionals) (n = 44)	Videos produced by non-experts (television or internet-based news or programs (n = 5) and patient (n = 1))	*P* value
Duration of upload on YouTube (mo)	15.8 ± 6.04/14 (7, 25)	14.3 ± 9.33/15.5 (3, 23)	.45
Video length (s)	2021 ± 2090/976 (58, 8188)	273 ± 184/176 (114, 518)	.01*
Number of views	34,116 ± 219,846/421 (80, 1,459,227)	1722 ± 1883/901 (126, 4684)	.22
Number of likes	393 ± 2408/13 (0, 16,000)	32.2 ± 24.9/30 (2, 60)	.28
Number of subscribers of the uploader	189,577 ± 686,963/6505 (0, 2,700,000)	210,157 ± 349,169/90,250 (941, 914,000)	.01*
mDISCERN score	1.75 ± 0.75/2 (0, 3)	1.5 ± 0.84/1 (1, 3)	.37
GQS score	2.18 ± 0.79/2 (1, 3)	1.17 ± 0.41/1 (1, 2)	.01*
Accuracy (n (%))			.76
Accurate	1 (2.27)	0 (0)	
Misleading	43 (97.73)	5 (100)	
Inaccurate and misleading	0 (0)	0 (0)	

Values are presented as frequencies (percentages) or mean ± standard deviations/medians (minimum and maximum).

GQS = Global Quality Scale, mDISCERN = modified DISCERN scale.

* *P* value < .05.

Table 3

Comparison of the general features among the groups according to reliability, quality, and accuracy.

	mDISCERN ≥ 3	mDISCERN < 3	*P* value	GQS ≥ 3	GQS < 3	*P* value	Accurate	Misleading	*P* value
n	8	42		18	32		1	49	
Duration of upload on YouTube (mo)	14 ± 5.42	15.9 ± 6.6	.65	11.6 ± 2.95	17.9 ± 6.76	.003*	10	15.7 ± 6.43	.40
Video length (s)	1418 ± 1653	1886 ± 2116	.99	3410 ± 1577	912 ± 1703	<.001*	813	1831 ± 2057	.96
Number of views	1878 ± 2506	35,629 ± 225,028	.73	1169 ± 1795	46,574 ± 257,784	.27	97	30,843 ± 208,312	.16
Number of likes	66.6 ± 125	404 ± 2466	.71	46.4 ± 84.7	520 ± 2825	.03*	4	357 ± 2282	.30
Number of subscribers of the uploader	18,033 ± 33,527	225,192 ± 708,968	1.00	7388 ± 5799	295,917 ± 802,108	.58	162	195,963 ± 659,336	.35

Values are presented as mean ± standard deviation.

GQS = Global Quality Scale, mDISCERN = modified DISCERN scale.

* *P* value < .05.

therapeutic effects of acupuncture for COVID-19 patients, and most studies other than case reports contain only theoretical statements or assumptions that acupuncture might be effective in controlling symptoms of COVID-19.[19,20] To demonstrate the effectiveness of acupuncture in treating symptoms of COVID-19, prospective randomized clinical trials with control or placebo groups are necessary. Owing to a lack of evidence, it is difficult to judge whether acupuncture is suitable for the treatment of COVID-19. Accordingly, statements or conclusions that acupuncture is effective against COVID-19 are incorrect or misleading. Among the videos included in our study, only 1 video contained accurate information that was based on research papers and books, and the remaining 49 videos included information that was at risk of biased content such as anecdotal information or information that lack sufficient scientific evidence. More than half of the included videos were considered unreliable and of poor quality. Biased, inaccurate, or poor-quality videos can mislead audiences regarding the true effect of acupuncture on COVID-19 patients, leading to inappropriate treatments.

Of the 50 videos, 44 were uploaded by experts (hospitals or professionals) and 6 were uploaded by non-experts (5 from television or internet-based news channels and 1 from a patient). The content-quality of the video produced by experts was found to be higher than that produced by non-experts; however, the average GQS score remained low at 2.18. In addition, 43 out of the 44 videos were considered misleading. Furthermore, the average mDISCERN score of the videos produced by experts was only 1.75. We found that even the videos produced by experts were not of high quality and reliability. Experts should then attempt to create high-quality videos based on scientific evidence.

In addition, videos with high or moderate quality (GQS ≥ 3) had a lower average duration of upload on YouTube, video length, and number of likes than videos with low quality (GQS < 3). The general population lacks the discernment capacity to identify which video content is credible on the internet.[13] Viewers should not believe the videos unconditionally and must verify the accuracy of the information through consultation with professionals or verified scientific facts.

5. Conclusion

In conclusion, the 50 most viewed videos in YouTube that contain information on the effect of acupuncture on COVID-19 treatment, including those produced by hospitals and professionals, had low reliability, content-quality, and accuracy. Recently, YouTube has become more accessible than TV or newspapers, and its platform is continuously growing. Therefore, sharing medical information through YouTube is becoming more common, and as this has become an important information delivery system for viewers, uploaders need to thoroughly review video content based on scientific facts to provide accurate information. Furthermore, as YouTube is not the sole source of medical information, it is necessary to acknowledge that individuals who perform YouTube searches to obtain information may be exposed to inaccurate information. In order to overcome this issue, it may be necessary to accompany such searches with a search for research articles, books, or news articles based on scientific studies. Our study included only the top 50 videos with

the most views based on a search involving a limited number of keywords. Viewers may use a greater variety of keywords to search for videos on acupuncture treatments for COVID-19. Also, our study is limited in that the reliability, content-quality, and accuracy of the videos were evaluated subjectively. Further studies addressing these limitations are warranted.

Author contributions

Conceptualization: Min Cheol Chang, Yoo Jin Choo.
Data curation: Min Cheol Chang, Yoo Jin Choo.
Formal analysis: Min Cheol Chang, Yoo Jin Choo.
Investigation: Min Cheol Chang, Yoo Jin Choo.
Methodology: Min Cheol Chang, Yoo Jin Choo.
Supervision: Min Cheol Chang, Yoo Jin Choo.
Writing – original draft: Min Cheol Chang, Yoo Jin Choo.
Writing – review and editing: Min Cheol Chang, Yoo Jin Choo.
All authors have read and agreed to the published version of the manuscript.

References

[1] Zhu H, Wei L, Niu P. The novel coronavirus outbreak in Wuhan, China. Glob Health Res Policy. 2020;5:6.
[2] Lee ACK, Morling JR. COVID-19 vaccine dilemmas. Public Health. 2022;202:10–1.
[3] Baj J, Karakuła-Juchnowicz H, Teresiński G, et al. COVID-19: specific and non-specific clinical manifestations and symptoms: the current state of knowledge. J Clin Med. 2020;9:1753.
[4] Feng Z, Yu Q, Yao S, et al. Early prediction of disease progression in COVID-19 pneumonia patients with chest CT and clinical characteristics. Nat Commun. 2020;11:4968.
[5] Kim SR, Nam SH, Kim YR. Risk factors on the progression to clinical outcomes of COVID-19 patients in South Korea: using national data. Int J Environ Res Public Health. 2020;17:8847.
[6] Mahendra M, Nuchin A, Kumar R, et al. Predictors of mortality in patients with severe COVID-19 pneumonia—a retrospective study. Adv Respir Med. 2021;89:135–44.
[7] Aghamirza Moghim AH, Eivazzadeh-Keihan R, Beig Parikhani A, et al. COVID-19: a systematic review and update on prevention, diagnosis, and treatment. MedComm. 2022;3:e115.
[8] Yamaguchi N, Takahashi T, Sakuma M, et al. Acupuncture regulates leukocyte subpopulations in human peripheral blood. Evid Based Complement Alternat Med. 2007;4:447–53.
[9] Zijlstra FJ, van den Berg-de Lange I, Huygen FJ, et al. Anti-inflammatory actions of acupuncture. Mediators Inflamm. 2003;12:59–69.
[10] Carneiro ER, Carneiro CR, Castro MA, et al. Effect of electroacupuncture on bronchial asthma induced by ovalbumin in rats. J Altern Complement Med. 2005;11:127–34.
[11] Yeh BY, Chen YL, Chang SA, et al. Acupuncture helps to regain the consciousness of a COVID-19 patient complicated with hypoxic-ischemic encephalopathy: a case report. Neurol Sci. 2021;42:475–8.
[12] Yin X, Cai SB, Tao LT, et al. Recovery of a patient with severe COVID-19 by acupuncture and Chinese herbal medicine adjuvant to standard care. J Integr Med. 2021;19:460–6.
[13] Chang MC, Park D. YouTube as a source of information on epidural steroid injection. J Pain Res. 2021;14:1353–7.
[14] Charnock D, Shepperd S, Needham G, et al. DISCERN: an instrument for judging the quality of written consumer health information on treatment choices. J Epidemiol Community Health. 1999;53:105–11.
[15] Zaila KE, Osadchiy V, Anderson AS, et al. Popularity and worldwide reach of targeted, evidence-based internet streaming video interventions focused on men's health topics. Transl Androl Urol. 2020;9:1374–81.
[16] Bernard A, Langille M, Hughes S, et al. A systematic review of patient inflammatory bowel disease information resources on the World Wide Web. Am J Gastroenterol. 2007;102:2070–7.
[17] Chun HS, Choi SH, Song HS. A meta-analysis of treatment effects on viral Pneumonia using TCM injections specified in the clinical guideline for COVID-19 in China. J Pharmacopuncture. 2021;24:107–21.
[18] Lv XH, Dong CH, Zhu YH. Tanreqing injection in the treatment of children's viral pneumonia: observation of clinical efficacy. China Pharm. 2007;18:2611–2.
[19] Han Z, Zhang Y, Wang P, et al. Is acupuncture effective in the treatment of COVID-19 related symptoms? Based on bioinformatics/network topology strategy. Brief Bioinform. 2021;22:bbab110.
[20] Lyu M, Fan G, Xiao G, et al. Traditional Chinese medicine in COVID-19. Acta Pharm Sin B. 2021;11:3337–63.