

Assessment of health information about the prevention of COVID-19 on the Internet

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Assessment of health information about the prevention of COVID-19 on the Internet

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Abstract

Background: The Internet is a large source of health information, and it has the capacity to influence its users. However, the information found on the Internet often lacks scientific rigor, as anyone may upload its content. This factor is a cause of great concern to scientific societies, governments, and users.

Objective: The objective of our study was to investigate the information about the prevention of coronavirus disease 2019 (COVID-19) on the Internet.

Methods: On 2020-02-29 we performed a Google search with the terms “Prevention coronavirus”, “Prevention COVID-19”, “Prevención coronavirus”, and “Prevención COVID-19”. A univariate analysis was performed to study the association between the type of authorship, and country of publication, and recommendations to avoid COVID-19 according to the World Health Organization.

Results: In total, 80 weblinks were reviewed. Most of them were produced in the USA and Spain (72.5%), by digital media and official public health organizations (75.1%). The most mentioned WHO preventive measure was “wash your hands frequently” (81.3%). Less frequent recommendation was related to “stay home if you feel unwell” (32.5%). The analysis by type of author (official public health organizations versus digital media) revealed significant differences regarding the recommendation to wear a mask if you are healthy only if caring for a person with suspected COVID-19 (OR = 4.39). According to country of publication (Spain versus the USA) significant differences were detected regarding some recommendations, such as “wash your hands frequently” (OR = 9.82), “cover your mouth and nose with your bent elbow or tissue when you cough or sneeze” (OR = 4.59), or “stay home if you feel unwell” (OR = 0.31).

Conclusions: It is necessary to urge and promote the use of the websites of official public health organizations when seeking information on COVID-19 preventive measures on the Internet. In this way, they will be able to obtain high-quality information more frequently, and such websites may improve their accessibility and positioning given that search engines justify the positioning of links obtained in a search based on the frequency of access to them.

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Objective. The objective of our study was to investigate the information about the prevention of coronavirus disease 2019 (COVID-19) on the Internet.

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Results. In total, 80 weblinks were reviewed. Most of them were produced in the USA and Spain (72.5%), by digital media and official public health organizations (75.1%). The most mentioned WHO preventive measure was “wash your hands frequently” (81.3%). Less frequent recommendation was related to “stay home if you feel unwell” (32.5%). The analysis by type of author (official public health organizations versus digital media) revealed significant differences regarding the recommendation to wear a mask if you are healthy only if caring for a person with suspected COVID-19 (OR = 4.39). According to country of publication (Spain versus the USA) significant differences were detected regarding some recommendations, such as “wash your hands frequently” (OR = 9.82), “cover your mouth and nose with your bent elbow or tissue when you cough or sneeze” (OR = 4.59), or “stay home if you feel unwell” (OR = 0.31).

Conclusions. It is necessary to urge and promote the use of the websites of official public health organizations when seeking information on COVID-19 preventive measures on the Internet. In this way, they will be able to obtain high-quality information more frequently, and such websites may improve their accessibility and positioning given that search engines justify the positioning of links obtained in a search based on the frequency of access to them.

Keywords

COVID-19; Coronavirus; Prevention; Internet; Information; Evaluation; Authorship; World Health Organization; Official public health organizations; Digital media

Introduction

Internet access has increased worldwide during the past decade, reaching 79.6% of the European

population and 48% of the world population in 2017 [1]. In the United States, 90% of adults go online to access the Internet [2] and 53.1% look for health information online [3].

As with previous epidemics, such as Ebola or Zika, the Internet has become a favored mechanism for the spread of misinformation [4,5]. This has implications for public health behavior and health-related decision making [6].

At present, an outbreak of coronavirus disease 2019 (COVID-19) has occurred and has spread throughout China and to dozens of countries [7]. As in other epidemics, people want to know what can be done to prevent and treat the disease [6]. Since there is currently no vaccine or specific antiviral treatment, the application of preventive measures is essential.

In this context, we aimed to conduct an infodemiological study [8,9] to investigate the information about the prevention of COVID-19 on the Internet.

Methods

On 2020-02-29 we performed a Google search and selected the first twenty links [5] of the Google search results, excluding advertisements. The search terms used were “Prevention coronavirus”, “Prevention COVID-19”, “Prevención coronavirus”, and “Prevención COVID-19”. Two reviewers (IHG and TGJ) viewed the links independently, and the following information was extracted from each one: type of authorship (official public health organizations, scientific societies, digital media, libraries, private health care system, articles from biomedical journals, and others), language, country of publication and recommendations to avoid COVID-19. The information was obtained by making up to four clicks on the different sublinks of each link, as has been done in other studies [10,11]. Subsequently, the degree of adherence to the following World Health Organization (WHO) basic protective measures against the new coronavirus in force on 29 February 2020 was checked: a) Wash your hands frequently; b) Maintain at least 1 meter (3 feet) distance between yourself and anyone who is coughing or sneezing; c) Avoid touching eyes, nose, and mouth; d) Cover your mouth and

nose with your bent elbow or tissue when you cough or sneeze (then dispose of the used tissue immediately); e) Stay home if you feel unwell; f) If you develop fever, cough, and difficulty breathing, seek medical advice promptly (call in advance and tell your provider of any recent travel); g) If you are healthy, you only need to wear a mask if you are taking care of a person with suspected COVID-19; and h) Wear a mask if you are coughing or sneezing [12].

We performed a descriptive analysis of all the variables and evaluated the association of the independent variables (type of authorship and country of publication) with the degree of adherence to the WHO basic protective measures by means of a Chi-square test or Fisher's exact test. When a significant association was found ($P < .05$), this was quantified with the odds ratio (OR) and its 95% confidence interval (95% CI) obtained from univariate logistic regression analysis. The agreement between the two reviewers regarding the adherence to the WHO basic protective measures was analyzed using the Kappa index. All analyses were performed using SPSS v20.0 and EpiInfo™.

Results

In total, 80 weblinks were reviewed (Table 1). Most of them were produced in the USA and Spain (72.5%) by digital media and official public health organizations (75.1%) (Table 2). There were no discrepancies between the authors regarding the degree of adherence to the WHO basic protective measures (Kappa = 1).

The most mentioned WHO preventive measures were "wash your hands frequently" (81.3%) and "maintain at least 1 meter (3 feet) distance between yourself and anyone who is coughing or sneezing" (70.0%). Less frequent recommendations were related to "stay home if you feel unwell" (32.5%) (Table 2).

Table 1. Electronic addresses of the 80 weblinks by search term

Search term: Prevention coronavirus
https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment-sp.html
https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment.html
https://www.ecdc.europa.eu/en/current-risk-assessment-novel-coronavirus-situation

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/advice-for-public>
<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/technical-guidance/infection-prevention-and-control>
<https://choice.npr.org/index.html?origin=https://www.npr.org/2020/02/27/810016611/coronavirus-101-what-you-need-to-know-to-prepare-and-prevent>
<https://www.nytimes.com/2020/02/26/health/coronavirus-cdc-usa.html>
<https://cuidateplus.marca.com/enfermedades/infecciosas/Coronavirus.html>
<https://www.osha.gov/SLTC/covid-19/>
<https://www.conehealth.com/services/primary-care/coronavirus-get-the-facts-on-symptoms-and-prevention-with-cynthi/>
<https://edition.cnn.com/2020/02/28/health/how-to-wash-hands-coronavirus-trnd/index.html>
<https://www.nbcnews.com/health/health-news/main-focus-preventing-coronavirus-spread-should-be-hand-hygiene-not-n1144346>
<https://www.businessinsider.com/wuhan-coronavirus-face-masks-not-entirely-effective-2020-1?IR=T>
<https://abc7news.com/5971803/>
<https://www.mobihealthnews.com/news/coronavirus-prevention-may-be-your-pocket>
https://www.washingtonpost.com/gdpr-consent/?next_url=https%3a%2f%2fwww.washingtonpost.com%2fhealth%2f2020%2f02%2f26%2fhow-to-prepare-for-coronavirus%2f
<https://www.cnn.com/2020/02/26/cdc-confirms-first-possible-community-spread-coronavirus-case-in-us.html>
<https://foreignpolicy.com/2020/02/28/taiwan-who-coronavirus-china-international-organizations/>
<https://parade.com/987803/lisamulcahy/coronavirus/>
<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/prevention-risks.html>

Search term: Prevention COVID-19

<http://www.euro.who.int/en/health-topics/health-emergencies/coronavirus-covid-19/news/news/2020/2/joint-who-and-ecdc-mission-in-italy-to-support-covid-19-control-and-prevention-efforts>
<https://openwho.org/courses/COVID-19-IPC-EN>
<https://www.ecdc.europa.eu/en/novel-coronavirus-china>
<https://www.ecdc.europa.eu/en/publications-data/infographic-covid-19>
<http://bvsalud.isciii.es/covid-19/>
<https://abc7news.com/5971803/>
<https://www.japantimes.co.jp/opinion/2020/02/27/editorials/covid-19-preventing-medical-system-breakdown/#.XlrmyahKg2w>
<https://jamanetwork.com/journals/jama/fullarticle/2762130>
<https://www.iata.org/contentassets/7e8b4f8a2ff24bd5a6edcf380c641201/airport-preventing-spread-of-coronavirus-disease-2019.pdf>
<https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment-sp.html>
<https://www.cdc.gov/coronavirus/2019-ncov/index-sp.html>
<https://www.osha.gov/SLTC/covid-19/controlprevention.html>
<https://www.cnn.com/2020/02/27/coronavirus-latest-updates-outbreak.html>
<https://www.mica.edu/campus-operating-status-updates/coronavirus/best-practices-and-preventive-measures/>
<https://www.kuow.org/stories/new-coronavirus-cases-found-in-king-and-snohomish-counties>
<https://www.euronews.com/2020/02/26/coronavirus-prevention-how-effective-are-masks-closed-borders-screenings-and-quarantines>
<https://www.health.govt.nz/our-work/diseases-and-conditions/covid-19-novel-coronavirus/covid-19-novel-coronavirus-health-advice-general-public>
<https://www.canada.ca/en/public-health/services/diseases/2019-novel-coronavirus-infection/>

prevention-risks.html
<https://www.bmj.com/content/368/bmj.m810>
<https://vietnamnews.vn/society/652839/pm-pushes-for-covid-19-preventive-measures.html>

Search term: Prevencion COVID-19

<https://www.cdc.gov/coronavirus/2019-ncov/index-sp.html>
<https://www.saludcastillayleon.es/profesionales/es/enfermedades-infecciosas/nuevo-coronavirus-covid-19/plan-especifico-prevencion-riesgos-laborales-nuevo-coronavi>
https://www.alimente.elconfidencial.com/bienestar/2020-02-29/coronavirus-covid19-que-es-sintomas-contagio_2431343/
<https://www.saludcastillayleon.es/profesionales/es/enfermedades-infecciosas/nuevo-coronavirus-covid-19>
<https://www.who.int/es/emergencias/diseases/novel-coronavirus-2019/advice-for-public/q-a-coronaviruses>
<https://www.ibsalut.es/es/info-ciudadania/cuidar-la-salud/3710-preguntas-y-respuestas-sobre-el-nuevo-coronavirus-2019-n-cov>
<https://www.campusvirtualsp.org/es/curso/virus-respiratorios-emergentes-incluido-el-2019-ncov-metodos-de-deteccion-prevencion-respuesta>
https://www.alimente.elconfidencial.com/bienestar/2020-02-29/coronavirus-covid19-que-es-sintomas-contagio_2431343/
<https://www.semfiyc.es/como-prevenir-infecciones-por-virus-respiratorios-como-el-coronavirus-que-cause-la-enfermedad-covid-19/>
<http://bvsalud.isciii.es/covid-19/>
https://www.mscbs.gob.es/profesionales/saludPublica/ccayes/alertasActual/nCov-China/documentos/20200224.Preguntas_respuestas_COVID-19.pdf
https://www.mscbs.gob.es/profesionales/saludPublica/ccayes/alertasActual/nCov-China/documentos/Documento_Control_Infeccion.pdf
https://www.lasexta.com/noticias/internacional/coronavirus-covid19-que-puedes-hacer-protégerte-como-actuar_202002245e53fcca0cf2547d2a31e546.html
<https://www.unicef.org/es/historias/coronavirus-lo-que-los-padres-deben-saber>
<https://www.lavanguardia.com/vida/20200229/473828128008/coronavirus-espana-madrid-barcelona-wuhan-china-italia-covid-19-contagios-sintomas-fallecidos-ultima-hora-hoy-en-directo.html>
<https://www.univision.com/local/philadelphia-wuwp/prevencion-del-coronavirus-que-funciona-para-evitar-la-propagacion-de-covid-19>
<http://bvsalud.isciii.es/covid-19/>
<https://medlineplus.gov/spanish/ency/article/007768.htm>
<https://sano-y-salvo.blogspot.com/2020/02/infografias-para-prevenir-la-infeccion.html>
<https://www.bbc.com/mundo/noticias-51683330>

Search term: Prevencion coronavirus

<https://cuidateplus.marca.com/enfermedades/infecciosas/Coronavirus.html>
<https://www.quironprevencion.com/es/campanas-prevencion-riesgos-laborales/coronavirus-covid-2019>
<https://medlineplus.gov/spanish/coronavirusinfections.html>
<https://www.cdc.gov/coronavirus/2019-ncov/about/prevention-treatment-sp.html>
<https://www.saludcastillayleon.es/profesionales/es/enfermedades-infecciosas/nuevo-coronavirus-covid-19/plan-especifico-prevencion-riesgos-laborales-nuevo-coronavi>
https://elpais.com/elpais/2020/02/25/ciencia/1582645440_172885.html
<https://www.elperiodico.com/es/sanidad/20200225/coronavirus-que-es-sintomas-contagio-prevencion-7814261>
<https://vacunasaep.org/profesionales/noticias/coronavirus-desarrollo-de-vacunas>

<https://www.hola.com/estar-bien/20200123158838/coronavirus-sintomas-prevenir-contagio/>
https://www.alimente.elconfidencial.com/bienestar/2020-02-29/coronavirus-covid19-que-es-sintomas-contagio_2431343/
https://www.diariocordoba.com/noticias/sociedad/que-es-coronavirus-sintomas-contagio-prevencion-virus_1351515.html
https://www.who.int/csr/disease/coronavirus_infections/ipc-mers-cov/es/
<https://www.intramed.net/contenido/ver.asp?contenido=95410>
<https://www.bbc.com/mundo/noticias-51683330>
<https://www.semes.org/semes-divulgacion/medidas-de-prevencion-ante-la-neumonia-por-coronavirus/>
<https://www.lavanguardia.com/seguros/empresa/20200217/473630100957/mwc-alerta-sanitaria-contagio-corona-virus-riesgos-laborales-seguros.html>
<https://chile.gob.cl/chile/medidas-de-prevencion-ante-el-nuevo-coronavirus>
<https://www2.cruzroja.es/-/como-puedes-reducir-el-riesgo-de-infeccion-del-coronavirus->
<https://temas.sld.cu/coronavirus/coronavirus/medidas-preventivas/>
<https://www.lavanguardia.com/ciencia/20200225/473756254816/coronavirus-covid-19-mascarilla-prevencion.html>

In addition, ambiguous or non-adhering information regarding WHO recommendations was found in eight weblinks (five from Spain and three from the USA, six of the eight were digital media). In particular, three Spanish links indicated "maintain a distance of approximately one meter between people". One Spanish link described that "for people without respiratory symptoms a surgical mask is not required, although masks can be worn in some countries according to local cultural customs". One link in Spain and another in the USA specified that "someone should only wear a mask if a healthcare professional recommends it". One link in the USA indicated that "If you're going to around a lot of sick people, like if you're visiting a friend in the hospital, a mask might be a good idea", and one link in the USA recommended, "Stay three feet away from people when you talk to them".

Table 2. Characteristics of the 80 weblinks

	Frequency, n (%)
Country of publication	
The USA	30 (37.5)
Spain	28 (35.0)
Switzerland	6 (7.5)
United Kingdom	3 (3.8)
Sweden	3 (3.8)
Canada	2 (2.5)
Others	8 (10.0)
Type of authorship	

Digital media	33 (41.3)
Official public health organizations	27 (33.8)
Libraries	6 (7.5)
Scientific societies	3 (3.7)
Articles from biomedical journals	2 (2.5)
Private health care system	2 (2.5)
Others	7 (8.7)
Language	
Spanish	45 (56.3)
English	35 (43.7)
Available recommendation according to the WHO	
Wash your hands frequently	65 (81.3)
Maintain at least 1 metre distance	56 (70.0)
Cover your mouth and nose when you cough or sneeze	54 (67.5)
Avoid touching eyes, nose, and mouth	44 (55.0)
Wear a mask if you are coughing or sneezing	39 (48.8)
If you develop fever, cough, and difficulty breathing, seek medical advice	37 (46.3)
If you are healthy, wear a mask if you are taking care of a person with suspected COVID-19	37 (46.3)
Stay home if you feel unwell	26 (32.5)

The univariate analysis by type of author (official public health organizations versus digital media) revealed statistically significant differences regarding the recommendation to wear a mask if you are healthy only if caring for a person with suspected COVID-19 (OR = 4.39) (Table 3). The analysis according to country of publication (Spain versus the USA) detected statistically significant differences regarding some recommendations, such as "wash your hands frequently" (OR = 9.82), "cover your mouth and nose with your bent elbow or tissue when you cough or sneeze" (OR = 4.59), or "stay home if you feel unwell" (OR = 0.31) (Table 4).

Table 3. Recommendations to avoid COVID-19 according to the WHO and information about them available on the Internet according to their authorship

Recommendation	Type of authorship	Available n (%)	Unavailable n (%)	OR (95% CI)	P value
Wash your hands frequently	Official public health organizations	23 (35.4)	4 (26.7)	2.16 (0.58-7.99)	.348
	Libraries	6 (9.2)	0 (0)	-	.305
	Others	12 (18.5)	2 (13.3)	2.25 (0.42-12.09)	.464
	Digital media	24 (36.9)	9 (60.0)	1	-
Cover your mouth and nose when you cough or sneeze	Official public health organizations	19 (35.2)	8 (30.8)	1.98 (0.68-5.79)	.214
	Libraries	6 (11.1)	0 (0)	-	.065

	Others	11 (20.4)	3 (11.5)	3.06 (0.72-13.01)	.191
	Digital media	18 (33.3)	15 (57.7)	1	-
Maintain at least 1 metre distance between yourself and anyone who is coughing or sneezing	Official public health organizations	21 (37.5)	6 (25.0)	2.00 (0.63-6.33)	.238
	Libraries	6 (10.7)	0 (0)	-	.151
	Others	8 (14.3)	6 (25.0)	0.76 (0.21-2.72)	.679
	Digital media	21 (37.5)	12 (50.0)	1	-
Avoid touching eyes, nose, and mouth	Official public health organizations	16 (36.4)	11 (30.6)	2.24 (0.79-6.32)	.129
	Libraries	6 (13.6)	0 (0)	-	.008
	Others	9 (20.5)	5 (13.9)	2.77 (0.76-10.13)	.122
	Digital media	13 (29.5)	20 (55.6)	1	-
If you develop fever, cough and difficulty breathing, seek medical advice (call and tell your provider of any recent travel)	Official public health organizations	11 (29.7)	16 (37.2)	1.06 (0.38-2.99)	.916
	Libraries	5 (13.5)	1 (2.3)	7.69 (0.81-73.55)	.078
	Others	8 (21.6)	6 (14.0)	2.05 (0.58-7.29)	.268
	Digital media	13 (35.1)	20 (46.5)	1	-
Stay home if you feel unwell	Official public health organizations	12 (46.2)	15 (27.8)	2.13 (0.73-6.27)	.169
	Libraries	1 (3.8)	5 (9.3)	0.53 (0.06-5.21)	.999
	Others	4 (15.4)	10 (18.5)	1.07 (0.72-4.28)	.999
	Digital media	9 (34.6)	24 (44.4)	1	-
Wear a mask if you are coughing or sneezing	Official public health organizations	17 (43.6)	10 (24.4)	1.81 (0.64-5.09)	.266
	Libraries	1 (2.6)	5 (12.2)	0.21 (0.02-2.02)	.206
	Others	5 (12.8)	9 (22.0)	0.59 (0.16-2.14)	.426
	Digital media	16 (41.0)	17 (41.5)	1	-
If you are healthy, wear a mask if you are taking care of a person with suspected COVID-19	Official public health organizations	20 (54.1)	7 (16.3)	4.39 (1.45-13.32)	.008
	Libraries	1 (2.7)	5 (11.6)	0.31 (0.03-2.94)	.391
	Others	3 (8.1)	11 (25.6)	0.42 (0.09-1.79)	.321
	Digital media	13 (35.1)	20 (46.5)	1	-

OR (95% CI): odds ratio (95% confidence interval)

Table 4. Recommendations to avoid COVID-19 according to the WHO and information about them available on the Internet according to their country of publication

Recommendation	Type of authorship	Available n (%)	Unavailable n (%)	OR (95% CI)	P value
Wash your hands frequently	Spain	27 (41.5)	1 (6.7)	9.82 (1.14-84.61)	.026
	Switzerland	4 (6.2)	2 (13.3)	0.73 (0.11-4.77)	.999
	Others	12 (18.5)	4 (26.7)	1.09 (0.27-4.39)	.999
	The USA	22 (33.8)	8 (53.3)	1	-
Cover your mouth and nose with your bent elbow or tissue when you cough or sneeze	Spain	24 (44.4)	4 (15.4)	4.59 (1.27-16.53)	.021
	Switzerland	4 (7.4)	2 (7.7)	1.53 (0.24-9.68)	.999
	Others	9 (16.7)	7 (26.9)	0.98 (0.29-3.34)	.979
	The USA	17 (31.5)	13 (50.0)	1	-
Maintain at least 1	Spain	22 (39.3)	6 (25.0)	1.57 (0.48-5.18)	.460

metre distance between yourself and anyone who is coughing or sneezing	Switzerland	4 (7.1)	2 (8.3)	0.86 (0.13-5.55)	.999
	Others	9 (16.1)	7 (29.2)	0.55 (0.16-1.94)	.356
	The USA	21 (37.5)	9 (37.5)	1	-
Avoid touching eyes, nose, and mouth	Spain	13 (29.5)	15 (41.7)	0.43 (0.15-1.25)	.123
	Switzerland	3 (6.8)	3 (8.3)	0.50 (0.09-2.94)	.645
	Others	8 (18.2)	8 (22.2)	0.50 (0.15-1.73)	.275
	The USA	20 (45.5)	10 (27.8)	1	-
If you develop fever, cough, and difficulty breathing, seek medical advice (call and tell your provider of any recent travel)	Spain	19 (51.4)	9 (20.9)	3.17 (1.08-9.31)	.035
	Switzerland	4 (10.8)	2 (4.7)	3.00 (0.47-19.04)	.374
	Others	2 (5.4)	14 (32.6)	0.21 (0.04-1.12)	.092
	The USA	12 (32.4)	18 (41.9)	1	-
Stay home if you feel unwell	Spain	6 (23.1)	22 (40.7)	0.31 (0.09-0.99)	.045
	Switzerland	2 (7.7)	4 (7.4)	0.57 (0.09-3.61)	.672
	Others	4 (15.4)	12 (22.2)	0.38 (0.09-1.46)	.209
	The USA	14 (53.8)	16 (29.6)	1	-
Wear a mask if you are coughing or sneezing	Spain	13 (33.3)	15 (36.6)	0.66 (0.24-1.87)	.439
	Switzerland	3 (7.7)	3 (7.3)	0.77 (0.13-4.43)	.999
	Others	6 (15.4)	10 (24.4)	0.46 (0.13-1.59)	.221
	The USA	17 (43.6)	13 (31.7)	1	-
If you are healthy, wear a mask if you are taking care of a person with suspected COVID-19	Spain	11 (29.7)	17 (39.5)	0.57 (0.19-1.61)	.288
	Switzerland	3 (8.1)	3 (7.0)	0.88 (0.15-5.05)	.999
	Others	7 (18.9)	9 (20.9)	0.68 (0.20-2.31)	.540
	The USA	16 (43.2)	14 (32.6)	1	-

OR (95% CI): odds ratio (95% confidence interval)

Discussion

This study is the first to evaluate the adherence of the information available on the Internet to the WHO basic protective measures against COVID-19. It shows a level of adherence that can be improved and a difficulty in obtaining such information, since it was only available in 32.5%–81.3% of the links.

The difficulty of finding WHO-promoted measures to prevent other infectious diseases on the Internet has also been described previously by other authors, such as Covolo [13]. This author, when studying the information on the Internet about the pandemic flu vaccine, showed how only 80.3% (61/76) and 53.9% (41/76) of the websites he evaluated contained, respectively, information on the indications and contraindications of the vaccine that correctly adhered to the WHO guidelines [13].

Less than half of the weblinks provided information on the correct use of masks, and together with the fact that some of the links provided information that was ambiguous or did not adhere to that of the WHO, may have contributed to the misuse of masks by the population and with the subsequent shortage of these devices that is occurring worldwide [14,15].

As with other studies that evaluated information on the Internet on preventive measures for other infections [11], our work shows that, in general, official public health organizations provide more correct information on measures to avoid COVID-19, which confirms what other authors have said about the reliability of the information provided by such institutions [10,13]. However, the fact that only 33.8% of the links referred to such organizations is an aspect that could be improved and shows the need to implement some interventions to increase the number of links of this type and/or their visibility on the Internet. In addition, digital media must also take responsibility for providing correct information and creating comprehension among citizens [16].

According to the analysis by country, the Spanish links provided much more information on measures to prevent COVID-19 that adhered to the WHO than did the links produced in the USA. Given that the measures to prevent COVID-19 by the Centers for Disease Control and Prevention [17] are the same as those of the WHO, and that the proportion of links with ambiguous or non-adhered-to information is similar in terms of originating in the USA (3/30) and Spain (5/28), an explanation for these differences could be that at the time of data collection, COVID-19 was considered to pose a moderate risk to public health in Spain (with 50 cases among 46 million people [18]), while in the USA the problem was still far away (with 66 cases among 327 million people [18]), and for this reason the USA links did not provide as much information as the Spanish links on how to prevent COVID-19.

One of the limitations of our study is one that is intrinsic to the Internet, namely that information changes continuously; like others [5,10,11,13,19], this paper analyzed the information available at a particular time. On the other hand, as in previous studies on other infectious diseases [5], only the

first 20 links obtained were evaluated, because it has been observed that Internet users only use the first two results pages [20]. Likewise, the search was carried out only with the Google search engine because it is the most popular search engine, covering nearly 90% of the total online searches [21]. Finally, like other studies [11,13], the search terms were chosen by the authors assuming that an Internet user would probably use one of them to perform simple searches on the web with respect to measures to prevent COVID-19.

Conclusion

It is necessary to urge and promote the use of the websites of official public health organizations (and specifically those originating from Spain for Spanish-speaking users) when seeking information on COVID-19 preventive measures on the Internet. In this way, they will be able to obtain high-quality information more frequently, and such websites may improve their accessibility and positioning given that search engines justify the positioning of links obtained in a search based on the frequency of access to them.

Conflicts of Interest

The authors have no competing interests to declare.

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Supplementary Files

