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Exploring the utility of Preevid, an evidence-based answer service to clinical questions, during the COVID-19 pandemic

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Abstract

Background: Clinical question services offer evidence-based relevant clinical information allowing health professionals to obtain answers in a timely manner.

Objectives: To explore the use and usefulness of Preevid, an evidence-based answering service for clinical questions, among health workers during the COVID-19 pandemic.

Methods: This study analyses the COVID-19-related clinical questions received in the Preevid service between 1 March 2020 and 28 February 2022. Particularly, it examines the topic, the type of professional who raised those questions, the epidemic period in which they were made, and the impact of the questions openly published on the Preevid online bank.

Results: Preevid service received 1111 clinical questions, of which 252 (22.7%) were about COVID-19 and half of these (132) were published on the online bank. The majority of COVID-19-related questions were about prevention (57.5%) and were mainly raised by physicians (57.9%) and nurses (34.1%). The Preevid question bank received 25,865,015 online views and it was mainly visited during the first months of the pandemic. COVID-19-related questions had 5,182,723 online views, of which 55% were originated in Spain.

Conclusions: Preevid, the service that gives evidence-based answers to clinical questions, helps health professionals with clinical decision making and clinical practice, also in crisis situations such as a pandemic.

Juan Antonio Sánchez Sánchez is currently retired.

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KEYWORDS

access to information, clinical decision making, clinical questions, decision support, evidence-based medicine (EBM), evidence-based nursing (EBN), evidence-based practice (EBP), information dissemination, information services

BACKGROUND

Evidence-based practice (EBP) is an approach to health care wherein health professionals use the best evidence possible to make clinical decisions (McKibbin, 1998). Four sources of evidence have been outlined: research, clinical experience, patient experience, and information from the local context (Rycroft-Malone et al., 2004). Although clinical experience is perceived by doctors to be helpful, this could also prevent physicians from identifying information needs and adopting new evidence (Swennen et al., 2013).

EBP reduces variability in clinical practice, improves the quality of health assistance and, consequently, improves health care, patient outcomes and efficiency (Connor et al., 2023; Fernández-Salazar et al., 2021; Ramos-Morcillo et al., 2015, 2021; Rodríguez-Calero et al., 2018). However, EBP is a complex process that requires knowledge, planning and time, its implementation is not easy and it is not exempt from barriers (Galbraith et al., 2017).

Physicians (Barzkar et al., 2018; Galbraith et al., 2017), nurses (Fernández-Salazar et al., 2021; Koehn & Lehman, 2008; Li et al., 2019; Ramos-Morcillo et al., 2015; Yoder et al., 2022) and other health-related professionals, such as physiotherapists (Scurlock-Evans et al., 2014), occupational therapists (Krueger et al., 2020; Upton et al., 2014), psychologists (Hamill & Wiener, 2018) or pharmacists (Awaisu & Alsalmiy, 2015; Burkiewicz & Zgarrick, 2005), hold generally a favourable attitude towards EBP and most of them believe that its implementation improves patient care. However, this does not necessarily translate into the practice of EBP, reporting the lack of personal time, evidence-seeking knowledge and skills, institutional support and research evidence to general practice as the most common barriers.

When doctors and nurses have information needs, they use several ways to answer their clinical questions, such as consulting their colleagues, reviewing journal articles and textbooks, seeking online internet-based evidence, using databases, or sharing their questions on professional social media networks (Albarqouni et al., 2019; Barzkar et al., 2018; Clarke et al., 2013; Daei et al., 2020). There seems to be a stronger preference among physicians for using pre-appraised evidence than for seeking evidence themselves (Galbraith et al., 2017). A study shows that although clinicians were effective at finding answers to questions they pursued, about half of the

Key Messages

- Identification of valid and relevant information requires searching and appraisal skills, as well as time, which is difficult for many busy health professionals.
- Health professionals need an evidence-based resource to give response to questions that arise during their habitual clinical practice.
- Unrestricted access to this type of evidence-based information is essential in order to provide quality and universal medical assistance.
- Health organisations should be encouraged to implement resources and tools such as clinical question banks to improve the uptake of evidence into healthcare practice.

questions were never pursued, and when clinicians decided to pursue a clinical question, they were successful approximately 80% of the time (Del Fiol et al., 2014). Appropriate policies should be adopted to provide clinicians with preappraised evidence and decrease their workload (Barzkar et al., 2018).

The COVID-19 pandemic was a challenge for health-care workers. The uncertainty in relation to the clinical and health management of the disease and the enormous amount of 'new information' generated, usually in 'pre-print' format that needed to be interpreted with caution, generated another barrier in the implementation of EBP among health workers.

A qualitative systematic review pointed out five barriers faced by hospital-based nurses: limited information about COVID-19, unpredictable tasks and challenging practices, insufficient support, concerns about family, and emotional and psychological stress (Joo & Liu, 2021). Another study found that American critical care nurses used both formal and informal sources to seek evidence support for clinical practices and showed concerns with lack of evidence and mistrust of evolving evidence (Bourgault et al., 2022).

COVID-19 pandemic promoted collaboration among clinical trial researchers, evidence synthesis methods were refined, and systematic reviews and living clinical practice guidelines were created (Agarwal & Guyatt, 2024; Jackevicius, 2021). Some initiatives for specific EBP for

COVID-19 emerged, such as the one led by the Joanna Briggs Institute (<https://jbi.global/covid-19>) and the website 'Evidence COVID-19 for all' created by the Nursing Now movement in Brazil and aimed at health professionals, adults and children, whose objectives included disseminating effective and innovative nursing practices based on scientific evidence (Loresto et al., 2021). In Spain, a family physicians group from Madrid (<https://covid19.gitbook.io/guia-coronavirus>) and the Spanish Association of Primary Care Pediatrics (<https://www.aepap.es/coronavirus/aepap-responde>) launched two projects to answer the questions arisen around this disease.

Institutions such as the World Health Organisation (WHO) point out the need to have independent structures that are responsible for the synthesis of the evidence, to facilitate its implementation among nurses and midwives in the European environment (Jylhä et al., 2017). It is important that healthcare managers provide health professionals with the necessary resources for EBP: expert support, availability of library support for seeking evidence and computer equipment (Booth & Beecroft, 2010; Clavijo-Chamorro et al., 2020). It is necessary to ensure that evidence reaching clinicians comes from reliable sources and it is available when needed and in an appropriate format (Andermann et al., 2016). A study examining critical appraisal tools relevant for nurses was published to help nurses locate the appropriate tool for the appraisal process (Buccheri & Sharifi, 2017).

Clinical questions and answers services

Clinical questions & answers services offer evidence based rapid summaries/reviews covering health professionals' information needs. Although these resources are widely spread and used, they are difficult to locate outside the health context itself, and access to them is sometimes complicated. Moreover, their procedures are very variable, and their scope and objectives are also very different.

PEARLS4PEERS (<https://pearls4peers.com/>) is an open website with listed questions and answers written by doctors and medical students, edited in the Department of Medicine of the Mercy Hospital (St. Louis, USA). AFP Clinical Answers, driven by the American Academy of Family Physicians (<https://www.aafp.org/home.html>), are published in the AFP Journal, and login or subscription is required. In Vancouver, the clinical answers on therapeutics in paediatric emergency medicine of the PRETx programme, published in Canadian Family Physician, are available on the Canadian Family Physician website (<https://www.cfp.ca>).

ATTRACT was a project created in 1997 to provide rapid, evidence-based summaries to clinical queries

submitted by practitioners in Gwent (Brassey et al., 2001). A pilot information service for general practitioners (GPs) was created in Australia (Hayward et al., 1999) and the University of Groningen in the Netherlands developed an evidence-based answering service for GPs (Verhoeven & Schuling, 2004). Another information service in United Kingdom was aimed at general practitioners and nurse practitioners (Swinglehurst et al., 2001).

In the Vanderbilt Clinical Informatics Consult Service (CICS) librarians receive questions from any member of the clinical team, research those questions and select the most relevant and evidentiary articles in answer to them (Jerome et al., 2001). Another librarian service is the 'Just-In-Time' Librarian Consultation Service, created in Canada for primary care clinicians (physicians, nurses and residents), which states that it is possible to give evidence-based answers to primary care clinical questions in 15 min or less (McGowan et al., 2010).

Many experimental question-answering systems have emerged, which take input questions in natural language and attempt to answer the questions on the basis of a datasets (Budler et al., 2023; Cairns et al., 2011; Kell et al., 2024).

The present study examines the use of Preevid, a service that gives evidence-based answers to clinical questions that are asked by health professionals from a Spanish region, and analyses the type and impact of the COVID-19-related questions submitted to it during the COVID-19 pandemic.

A similar service in Spain is Preclic (<http://www.preclic.com/>), created in 2015 by the Official College of Nursing of Valencia, that publishes a clinical question a week aimed at nurses. The Spanish Association of Pediatrics (<https://vacunasaep.org/profesionales/pregunta-al-cav>) resolves doubts about vaccines, which are included in a bank and grouped by category. The Spanish Association of Vaccinology (<https://vacunas.org/preguntas-al-experto/>) also answers vaccine-related doubts, and those that have greater relevance due to their clinical interest are published on the website, supported by bibliography and medical evidence.

Preevid

Preevid (<https://www.murciasalud.es/preevid.php>) is a Spanish evidence-based answering service for clinical questions, developed by the Technological Center for Health Information and Documentation (CTIDS) that belongs to the Murcian Health Service (MHS). It is managed by two full-time nurses and two full-time doctors who have previously worked in health services for 10 years or longer and have been trained in evidence-based information-seeking skills. They have librarians' support and, occasionally,

external collaborators who are experts in certain subjects. Other question-answering projects are, however, conducted by librarians rather than health professionals (Jerome et al., 2001; McGowan et al., 2010; Verhoeven & Schuling, 2004).

Preevid emerged in 2003, with the aim of resolving specific doubts raised during care practice, similarly to how ATTRACT (Brassey et al., 2001) did it in Wales. It was initially introduced to teaching health centres and it was offered to the entire MHS in 2005.

Questions to Preevid service can be submitted by the 10,000 health workers who belong to the Regional Ministry of Health and the MHS in the Region of Murcia, Spain (Ministerio de Sanidad, 2022a). Users must make specific questions and try to follow the PICO format (P = population, I = intervention, C = comparison, O = outcome). The response, prepared by one of the team members and reviewed at least by another one, includes the main conclusions of the studies consulted and their bibliographical references. The search for studies is protocolised, following the proposal of the 5.0 pyramid of evidence (Alper & Haynes, 2016) and those answers that are considered relevant are published in the free online Preevid question bank (Preevid-QB), available at <https://www.murciasalud.es/preevid.php?op=banco>.

Preevid-QB was publicly made accessible to everyone in March 2006 and it was included in Google Analytics in 2013. It currently (by 22 January 2025) includes 4391 questions grouped in 44 categories, of which six are COVID-19-related categories that were added during the COVID-19 pandemic (prevention, prognosis, diagnosis, treatment, clinical practice and general questions). Its homepage shows the 10 most recent questions uploaded on the bank.

In 1 March 2022, Preevid had received 7887 questions, of which 3906 (49.5%) were published.

Unlike other synthesised summaries for clinical reference such as UpToDate, DynaMed, BMJ Best Practice, Preevid lacks a continuous update process. A previous exploratory study carried out by the Preevid team examined the COVID-19-related questions published on the Preevid-QB during the first semester of the pandemic (5 March 2020 to 6 September 2020), showing that out of the 88 questions published, 27 (30.7%) were formulated by nurses and midwives, which had 2,944,141 online views (Pozo-Serrano et al., 2020).

Objectives

This study aims at giving more valuable insights into the use and usefulness of the Preevid evidence-based answering question service in the context of a new infectious

disease. Specifically, the purpose of this work is to give more insights about:

1. The use of the Preevid service by health workers in each epidemic wave of the COVID-19 pandemic (from 1 March 2020 to 28 February 2022).
2. Features of the COVID-19-related questions received in the Preevid service during the pandemic: topics and type of workers who ask them.
3. The impact and usefulness of the Preevid service, through the number of online unique views that the COVID-19-related questions received and the information of a satisfaction survey.

METHODS

Firstly, the questions received in the Preevid service from 1 March 2020 to 28 February 2022 were examined. We checked whether they were published on the online bank and whether they were related to COVID-19. We also checked the epidemic waves in which questions were made. According to the National Epidemiological Surveillance Network (Red Nacional de Vigilancia Epidemiológica, 2022), during the sampled period (1 March 2020–28 February 2022), there were six epidemic waves in Spain (Figure 1):

- Wave 1: from the beginning of the pandemic to 21 June 2020.
- Wave 2: from 22 June 2020 to 6 December 2020.
- Wave 3: from 7 December 2020 to 14 March 2021.
- Wave 4: from 15 March 2021 to 19 June 2021.
- Wave 5: from 20 June 2021 to 13 October 2021.
- Wave 6: from 14 October 2021 to 28 February 2022 (date on which the study ends).

Secondly, we analysed the 252 COVID-19-related questions, identifying the topic and the type of professional who asked them:

- Topic was classified into prevention, prognosis, treatment, clinic and diagnosis.
- Type of professional asking the question: doctors, nurses, residents and other workers (pharmacists, physical therapists, psychologists and emergency technicians).

Thirdly, we focused on the 132 COVID-19-related clinical questions published on the online Preevid-QB. Concretely, we identified the origin of the online views to these questions and we analysed the 10 most viewed questions, gathering the date in which these questions were submitted, the type of health professional who asked them, the topic and the number of views that they received.

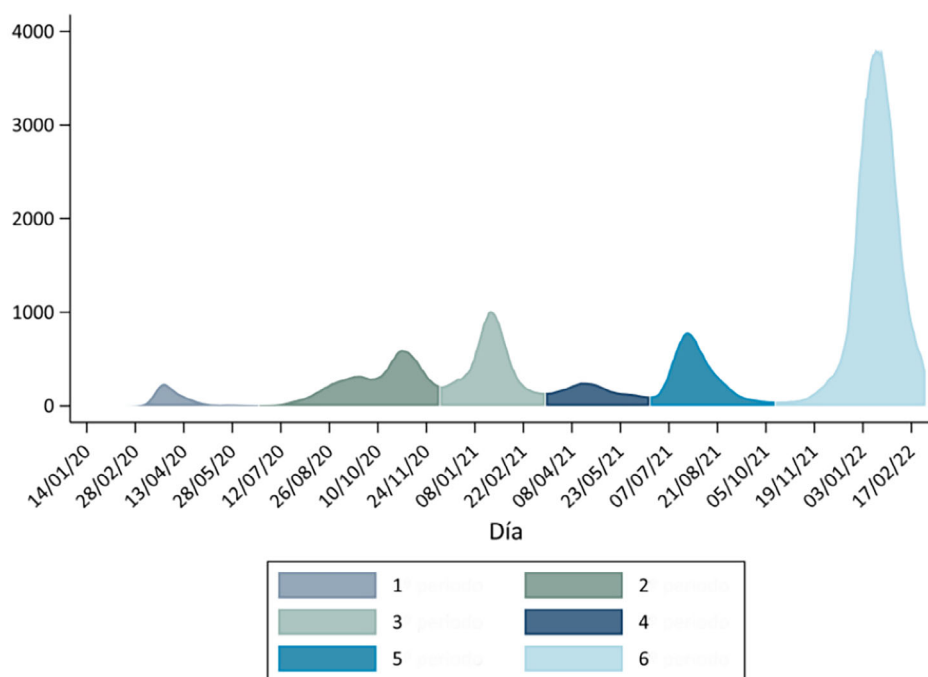


FIGURE 1 COVID-19 epidemic waves in Spain: cumulative incidence at 14 days per 100,000 inhabitants. *Source:* Red Nacional de Vigilancia Epidemiológica, 2022. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/hl.12593)]

Finally, the usefulness of the Preevid service during the COVID-19 pandemic was evaluated through two indicators: the level of satisfaction of the health professionals who asked the questions to the Preevid service, and the number of online views that the Preevid-QB received. The Preevid platform integrates a survey (see Table 6) for those clinicians who ask questions. It collects information about the purpose of the question and whether the answer improves care practice, among others, and it is, therefore, sent to the user when the question is resolved. This survey is mandatory for users who want to ask a new question. This survey was launched on 1 January 2020 and data are only available up to 5 March 2021. Google Analytics was used to gather the number of unique online views that the Preevid-QB received.

RESULTS

The Preevid service received 1111 clinical questions during the first 2-year pandemic period, of which 252 (22.8%) were about COVID-19 and half of these (132) were published on the Preevid-QB. Questions about COVID-19 represented 38% of the total questions published on the bank during this period (Table 1).

The 252 COVID-19-related questions submitted to the Preevid service were mainly about prevention (57.5%), and to a lesser extent about diagnosis (14.7%), treatment

(13.1%), prognosis (11.9%) and clinical (2.8%) (Table 2). Around two-thirds (164, 65%) of the questions were submitted in the first two epidemic waves, showing a decreasing trend throughout all waves. Out of the 145 questions about prevention, almost half (68, 47%) were posted on the bank and a quarter (38, 26.2%) were related to COVID-19 vaccines, being the first vaccine-related question received on 6 January 2021.

The majority of the 252 COVID-19-related questions sent to the Preevid service were asked by family doctors (57.9%) and nurses (34.1%). A few questions (4%) were raised by the 'Residents' group, which includes those workers from the different professional categories who are in their specialised health training period, and by the 'Other professional' group (4%), which includes pharmacists, physiotherapists, psychologists and emergency technicians (Table 3).

The Preevid-QB received above 25 million online views (25,865,015 visits), coming from 141 countries. It was mainly visited during the first months of the COVID-19 pandemic, with a peak of 2,297,927 views a day at the beginning of March 2020 and a subsequent decreasing trend, but having peaks at the beginning of each epidemic wave (Figure 2). The COVID-19-related questions published on the online Preevid-QB received above five million online views, from 98 countries. Views were originated mainly in Spain (55.3%) and in Spanish-speaking countries, such as Mexico (10.4%), Peru (8.4%), Colombia

TABLE 1 Questions received in the Preevid service from 1 March 2020 to 28 February 2022, by epidemic wave.

Epidemic waves	Received questions			COVID-19-related questions		
	Total	Published in the bank	Not published in the bank	Total	Published in the bank	Not published in the bank
Wave 1	228	98 (43%)	130 (57%)	96	73 (76%)	23 (24%)
Wave 2	214	65 (30%)	149 (70%)	68	26 (38%)	42 (62%)
Wave 3	164	43 (26%)	121 (74%)	34	13 (38%)	21 (62%)
Wave 4	168	39 (23%)	129 (77%)	25	9 (36%)	16 (64%)
Wave 5	141	49 (35%)	92 (65%)	13	8 (62%)	5 (38%)
Wave 6	196	51 (26%)	145 (74%)	16	3 (19%)	13 (81%)
Total	1111	345 (31%)	766 (69%)	252	132 (52%)	120 (48%)

TABLE 2 Topic of the 252 COVID-19-related questions received in the Preevid service from 1 March 2020 to 28 February 2022, by epidemic wave.

Epidemic wave	Prevention (<i>n</i> = 145)		Diagnosis (<i>n</i> = 37)		Treatment (<i>n</i> = 33)		Prognosis (<i>n</i> = 30)		Clinic (<i>n</i> = 7)		Total (<i>n</i> = 252)
	P	NP	P	NP	P	NP	P	NP	P	NP	
Wave 1	39	16	10	4	9	1	9	2	6	0	96 (38%)
Wave 2	10	25	6	6	5	6	5	5	0	0	68 (27%)
Wave 3	7	14	2	4	2	3	2	0	0	0	34 (14%)
Wave 4	5	11	1	0	0	3	3	1	0	1	25 (10%)
Wave 5	6	3	1	0	0	1	1	1	0	0	13 (5%)
Wave 6	1	8	0	3	2	1	0	1	0	0	16 (6%)
Total	68 (47%)	77 (53%)	20 (54%)	17 (46%)	18 (55%)	15 (45%)	20 (67%)	10 (33%)	6 (86%)	1 (14%)	252 (100%)

Abbreviations: NP, not published in the bank; P, published in the bank.

TABLE 3 Type of health professional who asked the 252 COVID-19-related questions received in the Preevid service from 1 March 2020 to 28 February 2022, by epidemic wave.

Pandemic period	Number of questions sent to Preevid by profession									
	Doctor (<i>n</i> = 146)		Nurse (<i>n</i> = 86)		Resident (<i>n</i> = 10)		Other professional (<i>n</i> = 10)		Total (<i>n</i> = 252)	
	P	NP	P	NP	P	NP	P	NP	P	NP
1°	41	14	28	8	1	1	3	0	73	23
2°	16	25	8	15	2	0	0	2	26	42
3°	9	11	4	6	0	2	0	2	13	21
4°	7	12	2	2	0	2	0	0	9	16
5°	4	1	3	2	0	1	1	1	8	5
6°	1	5	1	7	0	1	1	0	3	13
Total	78 (53%)	68 (47%)	46 (54%)	40 (46%)	3 (30%)	7 (70%)	5 (50%)	5 (50%)	132 (52%)	120 (48%)

Abbreviations: NP, not published in the bank; P, published in the bank.

(3.6%), Argentina (3%), Chile (3%), Ecuador (2.5%), Bolivia (1%), Venezuela (1%) and the United States (1%) (Table 4).

The 10 most viewed COVID-19-related questions received 3,844,012 views, accounting for almost three

quarters (74%) out of views that all COVID-19-related questions had. The five most popular questions were about prevention, specifically about decontamination of masks, difference between masks and disinfection of contaminated surfaces, and they were mainly asked by

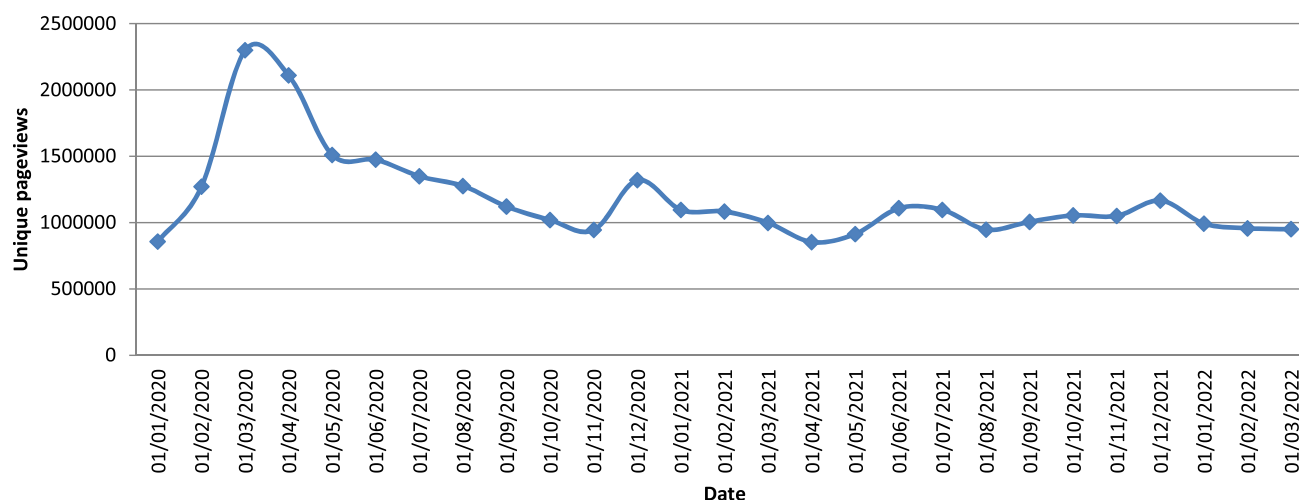


FIGURE 2 Number of online views to Preevid from 1 March 2020 to 28 February 2022. [Colour figure can be viewed at [wileyonlinelibrary.com](https://onlinelibrary.wiley.com/doi/10.1111/hilj.12595)]

TABLE 4 Origin of the online views to the COVID-19-related questions published on the online Preevid-QB from 1 March 2020 to 28 February 2022.

Country	Number of views	%
Spain	2,865,023	55.28
Mexico	538,177	10.38
Peru	435,692	8.41
Colombia	186,110	3.6
Argentina	159,240	3.07
Chile	153,039	2.95
Ecuador	130,217	2.51
Other	715,225	13.8
Total	5,182,723	100

nurses (Table 5). The most popular question was 'Decontamination of FFP2/3 and N95 masks in case of shortage by COVID-19', with 1,632,970 views, accounting for almost a third (31.5%) out of views that all COVID-19-related questions had. The other five questions were asked by physician and were about different topics (treatment, prognosis and diagnosis).

A survey-based analysis was carried out to examine the utility of Preevid perceived by healthcare workers who asked clinical questions to Preevid between 1 January 2020 and 5 March 2021. The 346 completed surveys were filled in by 198 (57.2%) doctors, 104 (30%) nurses, 23 (6.6%) residents and 22 (6.3%) health workers belonging to other categories. The majority of respondents declared that the given answer to their question improved healthcare practice (268 respondents, 77.2%) and made their decision-making in healthcare practice vary (206 respondents, 60%). Respondents also indicated

that the given answer was useful for healthcare practice (68%), research (32%) and teaching (15%) (see Table 6). Thirty respondents stated that they had not shared the given response or that they did not plan to share the response; however, 19 of them considered the answer useful.

DISCUSSION

The COVID-19 pandemic has been a global challenge. It generated uncertainty in healthcare, especially during the first months when the mortality rate was high and the healthcare treatment of the disease was unclear. It was a matter of concern for health professionals, and especially nurses, who worked on the front line of care for hospitalised COVID-19 patients (Joo & Liu, 2021; Nie et al., 2020), which led them to use evidence-based sources to seek support for clinical practices.

During the first 2 years of the COVID-19 pandemic (1 March 2020–28 February 2022), the Preevid service received 252 clinical questions related to this disease. Most (57%) of them were about prevention and diagnosis (14.6%), treatment/therapy (13%) and prognosis (11.9%) to a lesser extent. During the first two epidemic periods, these questions were mainly about the use and decontamination of masks, hand hygiene and surface disinfection. When vaccination started in Spain, on 27 December, doubts rose about its effectiveness and safety, and this was reflected in questions submitted to Preevid. The high number of questions related to the use and decontamination of masks, during the first two epidemic periods, is closely related to the shortage of masks (Company-Sancho et al., 2021) that affected most health systems.

TABLE 5 The 10 most viewed COVID-19-related questions published on the Preevid-QB.

Question title	Question date (epidemic wave)	Topic	Professional	Number of views (%)
Decontamination of FFP2/3 and N95 masks in case of shortage by COVID-19. http://www.murciasalud.es/preevid/23560	27 March 2020 (1 ^a wave)	Prevention	Nurse	1,632,970 (31.5%)
Is isopropyl alcohol effective in disinfecting surfaces contaminated by COVID-19? http://www.murciasalud.es/preevid/23528	18 March 2020 (1 ^a wave)	Prevention	Pharmacist	410,896 (7.9%)
Efficacy of N95 filter masks vs. FFP2. http://www.murciasalud.es/preevid/23536	22 March 2020 (1 ^a wave)	Prevention	Nurse	392,456 (7.6%)
What is the difference between FFP2 and FFP3 filter masks? http://www.murciasalud.es/preevid/23535	22 March 2020 (1 ^a wave)	Prevention	Nurse	390,614 (7.5%)
Alcohol for disinfection of medical equipment contaminated by SARS-CoV-2. http://www.murciasalud.es/preevid/23541	23 March 2020 (1 ^a wave)	Prevention	Nurse	294,297 (5.7%)
In patients with COVID 19 and diarrhoea, is treatment with loperamide or codeine indicated? http://www.murciasalud.es/preevid/23533	21 March 2020 (1 ^a wave)	Treatment	Doctor	252,981 (4.9%)
N-acetylcysteine and COVID-19. https://www.murciasalud.es/preevid/23788	8 September 2020 (2 ^a wave)	Treatment	Doctor	218,909 (4.2%)
SARS-CoV-2 PCR cycle threshold and infectiousness. http://www.murciasalud.es/preevid/24325	13 August 2021 (5 ^a wave)	Diagnosis	Doctor	207,702 (4%)
What laboratory data is associated with a worse evolution of COVID-19? http://www.murciasalud.es/preevid/23599	13 April 2020 (1 ^a wave)	Prognosis	Doctor	176,971 (3.4%)
Management of an asymptomatic patient who, after clinical recovery from COVID-19 (5 months ago) and negative RT-PCR on discharge from hospital, presents a new positive RT-PCR. http://www.murciasalud.es/preevid/23768	11 August 2020 (2 ^a wave)	Prognosis	Doctor	160,513 (3.1%)

This result contrasts with previous data, since the start of Preevid (1 January 2004) until 28 February 2020, the majority (2823, 42.5%) of the 6639 formulated questions to Preevid were about therapy and just a minority (329, 5%) were about prevention. Nevertheless, this need for information among physicians and nurses on therapeutic aspects compared to other topics has also been highlighted in studies prior to the COVID-19 pandemic (Albarqouni et al., 2019; Clarke et al., 2013; Daei et al., 2020; Del Fiol et al., 2014; Hayward et al., 1999; Jerome et al., 2001; Muscat et al., 2020). These studies also mention diagnosis as a common theme asked in clinicians' questions. Moreover, literature has showed that both treatment/therapy and diagnosis also are the most frequent topics on residents' clinical questions (Green et al., 2000; Martinez-Silveira & Oddone, 2008; Schilling et al., 2005).

The 252 COVID-19-related questions submitted to Preevid were mainly asked by doctors (57.9%) and nurses

(34.1%). A previous study found that 15.8% out of questions submitted to the Preevid service until 2006 were formulated by nurses (Aguinaga-Ontoso et al., 2006), showing a significant increase in the use of the Preevid service among nurses during the COVID-19 pandemic and therefore, supporting nurses' concern and need of evidence-based knowledge during this period. Moreover, questions raised by nurses had a great impact, since results showed that four out of the 10 most viewed questions were asked by nurses.

However, the proportion of doctors using the Preevid service is quite higher than the proportion of nurses using it. Since the beginning of Preevid until February 2020, doctors submitted 57% of questions and nurses submitted 30% of questions. Nevertheless, the number of nurses in the Region of Murcia in 2019 is higher than the number of doctors: 3799 doctors including paediatrics (2688 working in public hospitals and 1111 in primary

TABLE 6 Issues included in the survey sent to clinicians ($n = 346$) who submitted a question to the Preevid service, from 1 January 2020 to 5 March 2021.

Issue	Options for each issue	Number of respondents
Asked question purpose	Healthcare practice	237 (68.5%)
	Research	58 (16.76%)
	Teaching	32 (9.25%)
	Other purpose	19 (5.49%)
Answer usefulness	For healthcare practice (only)	192 (55.49%)
	For research (only)	45 (13.01%)
	For teaching (only)	24 (6.94%)
	For other purposes (only)	15 (4.34%)
	For healthcare practice and teaching	19 (5.49%)
	For healthcare practice and research	12 (3.47%)
	For healthcare practice and other purposes	6 (1.73%)
	For healthcare practice, teaching and research	6 (1.73%)
	For healthcare practice, teaching, research and other	2 (0.58%)
	For research and teaching	2 (0.58%)
The answer will change the decision-making process with the patient	Not useful	23 (6.65%)
	Yes	206 (59.54%)
	No	76 (21.97%)
The answer will improve the patient care	I don't know	64 (18.50%)
	Yes	268 (77.46%)
	No	40 (11.56%)
I shared or I am going to share the answer with my colleagues	I don't know	38 (10.98%)
	No	30 (8.67%)
	Yes, through courses	22 (6.36%)
	Yes, through sessions	60 (17.34%)
	Yes, through informal way	140 (40.46%)
	Yes, through social media	21 (6.07%)
	Yes, through other ways	31 (8.96%)
	Yes, through several ways	42 (12.14%)

care teams) and 5208 nurses (4362 working in public hospitals and 846 in primary care teams) (Ministerio de Sanidad, 2022b).

A survey conducted in France among healthcare professionals, including 144 physicians and 64 nurses, also found that the use of evidence-based medicine and evidence-based medicine practice was higher among physicians than among nurses (58% vs. 43%) (Lafuente-Lafuente et al., 2019).

The differences observed in the information needs between doctors and nurses could be due to their different professional competencies. The *Law 44/2003, of November 21, about the organisation of health professions* (BOE, number 280, published on 22 November 2003) states that 'it is expected that doctors indicate and carry

out activities aimed at the promotion and maintenance of health, the prevention of diseases and the diagnosis, treatment, therapy and rehabilitation of patients, as well as the judgment and prognosis of the processes under consideration of attention' (p. 11) and 'it is expected that university graduates in Nursing direct, evaluate and provide nursing care aimed at the promotion, maintenance and recovery of health, as well as the prevention of diseases and disabilities' (p.12).

Results in this study show that only a tiny (4%) proportion of questions were asked by residents. One reason might be that Preevid is aimed at answering specific questions and residents are inexperienced professionals and they have greater general information needs, suggesting they might prefer resolve their doubts by asking

more experienced colleagues. Literature shows that residents face different barriers in every step of the EBM process, some of which are unique to their status as trainees (Green & Ruff, 2005; van Dijk et al., 2010).

Other point of care resources such as UpToDate have been shown to be capable of influencing and changing patient management (Phua et al., 2012) and have even improved health outcomes such as hospital stay and mortality (Isaac et al., 2012). Just like UpToDate, according to the survey data, respondents judge Preevid as a useful resource for their care practice, and it could be a resource capable of modifying and improving healthcare practice. However, due to lack of resources and the complexity involved, no study has been carried out that has evaluated its outcomes in health.

The majority (91.3%) of clinicians who completed the survey shared or had a predisposition to share the answered question with their colleagues. It reflects the importance and usefulness they allot to the information offered to them. This also suggests that these professionals become an effective means of disseminating this evidence-based content, allowing it to reach more users. This aspect is also confirmed in a study that evaluated the impact of the questions published on the Preevid-QB during the first 6 months of the pandemic, in which it was observed that many health professionals used the social network Twitter (now named X) to disseminate these questions (Rosa-García, 2024).

Results from the survey also show that Preevid is used for non-care purposes. For example, it is used by academic professors and nursing students, for teaching and acquiring competencies in EBP, both nationally and internationally (e.g., European Nursing Virtual Center for Learning Evidence-Based Practice, <https://europeannursingebp.eu/centre/>). Preevid questions have also been used as a bibliographic reference in journal articles (Aranaz-Andrés et al., 2020; Company-Sancho et al., 2021) and institutional documents (Armadans-Gil et al., 2021; Olivera & Maggia, 2020; Servicio Murciano de Salud, 2020), which reflects the utility and quality attributed to this tool. Preevid-QB has been recommended as an evidence-based quality source by the Instituto de Salud Carlos III (Instituto de Salud Carlos III, 2020) and the Spanish Center for Evidence-Based Care (<https://www.evidenciaencuidados.es/>). Moreover, clinical question sections of numerous Spanish institutions, such as The Andalusian Government, are redirected to the Preevid-QB (see, for instance: <https://www.picuida.es/banco-de-preguntas>, <https://portalandaluciacovid19.es/banco-de-preguntas-clinicas/>).

In the context of the COVID-19 pandemic, the WHO called for promotion of the dissemination of accurate information and, thus, to be able to fight the infodemic (WHO, 2020). The answered questions published on the

Preevid-QB have also reached the general population and have been used for non-academic or non-care purposes. Therefore, although this is not the objective of the service, free access to the bank makes it easier for diverse types of users to have a source of reliable information (Rosa-García, 2024).

Results show a high impact of the Preevid-QB during the first two years of the COVID-19 pandemic, with almost 26 million unique views in total and above five million views to the COVID-19-related questions. The increase in online views coincides with the incidence peaks of each epidemic wave, evidencing the usefulness of the tool. The highest number of visits occurred during the first epidemic wave, when uncertainty and the need for knowledge were greater, and it decreased in the following waves, when the level of insecurity was lower. Since Preevid is a Spanish-language tool, it was expected that online views were mostly from Spanish-speaking countries and mainly originated in Spain.

LIMITATIONS

This study presents some limitations. Only health professionals who work in public health institutions in a particular Spanish region (Region of Murcia) can submit questions to Preevid, and their clinical questions may differ from those of health professionals from other geographical and healthcare spheres.

The Preevid-QB is a Spanish-language tool, so it has a language bias. Although all the questions received in Preevid are answered, only those that reflect a specific clinical scenario are published in the Preevid Q-B, and the impact of this is based on the number of online views received. Regarding users who visit the Preevid-QB, we only have their geographical location, but we do not know other characteristics, such as professional profile and institutional affiliation.

CONCLUSIONS

Preevid is a resource highly used by health professionals and frequently visited, with online visits coming not only from Spain but also from other Spanish-speaking countries. A service of clinical questions that gives quick answers based on evidence, created and supported by the health organisation itself, such as Preevid, facilitates EBP.

The Preevid-QB has proven to be a barometer of health professionals' concerns during the COVID-19 pandemic, as the number of received questions and online visits considerably increased, proving to be especially a useful tool in times of health crisis. As far as we know,

there is no other resource for EBP like Preevid, which makes it unique.

CONFLICT OF INTEREST STATEMENT

This study has been developed entirely by the Technological Center of Health Information and Documentation that belongs to the Murcian Health Service. The authors declare not to have conflict of interest.

DATA AVAILABILITY STATEMENT

Data sharing is not applicable to this article as no new data were created or analyzed in this study.

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SUPPORTING INFORMATION

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

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