Assessing the Accuracy of COVID-19 Information Circulating in a Facebook Online Community

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ABSTRACT

Online health communities (OHCs) have emerged as critical platforms for accessing and exchanging health-related information, including updates about COVID-19. Given the prevalence of misinformation in digital spaces, ensuring the quality of online health content remains a pressing concern. This study evaluates the accuracy of COVID-19-related information disseminated within a Facebook-based OHC. We compared the community's content to the most robust and up-to-date scientific evidence available during the study period (November 2021 to January 2022). By analyzing posts and their corresponding comments, we identified three dominant themes: "post-COVID," "vaccination," and "infection." Our findings reveal significant gaps in accuracy: nearly 60% of claims about "post-COVID" lacked scientific support, 12.9% of vaccination-related content was inaccurate, and only 47% of infection-related posts aligned fully with evidence-based guidelines. Overall, approximately one-third of the OHC's content was partially or entirely inconsistent with scientific consensus. These results highlight the persistent risk of COVID-19 misinformation exposure among participants in online health communities, underscoring the need for proactive interventions to enhance information quality in digital health spaces.

Keywords: data quality; social media; SARS-CoV-2 infection; misinformation; health information Exchange; covid-19.

INTRODUCTION

The internet has increasingly become a primary source for people seeking and sharing information about diseases and health conditions to better understand their clinical situations (Pereira Neto *et al.,* 2021). The COVID-19 pandemic was no exception. The crisis affected various sectors and was marked by heightened anxiety and uncertainty due to the novel nature of the disease. Within this landscape, online health communities (OHCs) emerged as key digital spaces for accessing and exchanging COVID-19-related information (Green *et al.,* 2021). These platforms became valuable sources of information and support, particularly because of their ability to provide readily available content, facilitate experience-sharing, foster emotional connections, and enable the exchange of informational and emotional support among patients and other interested individuals (Pereira Neto *et al.,* 2021; Green *et al.,* 2021).

OHCs offer numerous benefits, including empowering individuals, improving decision-making, and enhancing self-care and self-management of health conditions (Johansson *et al.,* 2021; Pereira Neto *et al.,* 2021). However, for these benefits to be realized, the information shared within these communities must be of high quality.

Concerns about the quality of online health information have intensified in recent decades, particularly due to the proliferation of false news and misinformation (Suarez-Lledo; Alvarez-Galvez, 2021). According to Allcott and Gentzkow (2017), "fake news" refers to intentionally false and verifiable content designed to mislead a large audience. The increasing engagement with online social networks, combined with declining trust in traditional news sources, has contributed to the widespread dissemination of such content (Allcott; Gentzkow, 2017).

Although the term "fake news" is frequently used to describe the spread of false content, Wardle and Derakhshan (2017) suggest that "misinformation" may be a more appropriate term, as it is not limited to journalistic content or traditional media. According to these authors, misinformation can be classified into several types, including false connections (headlines that do not match the content), false context, manipulated content, satire or parody, misleading content, imposter content, and fabricated content (intended to manipulate public opinion and cause harm) (Wardle; Derakhshan, 2017).

Moreover, misinformation can be understood as a product of social practices, forming part of a broader cultural phenomenon in which individuals and institutions compete to establish meanings that serve their own interests (Oliveira, 2020). The dissemination of such ideas is often shaped by notions of falsehood and intentional deception, aiming to advance personal beliefs, values, ideologies, or political agendas (Oliveira, 2020).

The COVID-19 pandemic was no exception. A significant volume of misinformation about the disease was disseminated, primarily through digital media (Galhardi *et al.,* 2020; Gabarron *et al.,* 2021). In Brazil, one of the most prominent forms of misinformation centered

on so-called "early treatment" for the disease. This involved the promotion of medications without scientific evidence for the prevention or cure of COVID-19, widely disseminated on social media – even with support from government entities.

Public figures, such as Olavo de Carvalho, a far-right digital influencer, played a key role in spreading misinformation about this treatment and other false claims (Oliveira, 2020). The anti-vaccine movement also contributed to the misinformation surrounding COVID-19, falsely claiming – without any evidence – that vaccines were designed to implant microchips or cause death (Ball, 2020; Oliveira, 2020).

Galhardi *et al*. (2020) emphasize that

> a disseminação de notícias falsas contribui para o descrédito da ciência e das instituições globais de saúde pública, bem como enfraquece a adesão da população aos cuidados necessários de prevenção, ao lidar com a epidemia (Galhardi *et al.,* 2020, p. 4208)[1].

Beyond the spread of misinformation, particularly through digital media, another critical issue concerning the quality of online health information is the presence of content that, while not intentionally false, is outdated in relation to the latest scientific evidence, contains inaccuracies, or is difficult to understand.

In their study, Pereira Neto *et al*. (2022) evaluated the quality of COVID-19-related information available on four Brazilian government websites. The authors found that, overall, these websites provided low-quality information, with none achieving an average score above 60% based on the adopted evaluation criteria. Additionally, less than half (42%) of the content on each page aligned with the information published on the official Brazilian Ministry of Health website dedicated to COVID-19 (Pereira Neto *et al.,* 2022).

Although this content was not deliberately false, access to incorrect or outdated information that contradicts current scientific evidence can have serious health implications. It may impair individuals' ability to make informed decisions about their health and contribute to increased anxiety and panic (Johnson *et al.,* 2022; Pereira Neto; Paolucci, 2021; Pereira Neto *et al.,* 2022).

Given these concerns, several studies have been conducted to assess the quality of health information available on websites and other digital platforms. In general, these studies use five key criteria: technical aspects, interactivity, comprehensiveness, readability, and accuracy (Pereira Neto; Paolucci, 2021). The technical criterion assesses whether the content provides information about its authorship and sources. The interactivity criterion examines whether the platform allows users to communicate with one another and with administrators. The readability criterion evaluates whether the content is easily understandable for non-

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1 Translation: "the spread of false news contributes to the discrediting of science and global public health institutions while also weakening public adherence to necessary prevention measures in handling the epidemic" (Galhardi *et al*., 2020, p. 4208, editorial translation).

specialist users. The comprehensiveness criterion determines whether the platform covers the most relevant health-related topics (Pereira Neto; Paolucci, 2021). Finally, the accuracy criterion warrants special attention.

Eysenbach *et al*. (2002) define accuracy as the extent to which information aligns with the best available evidence or commonly accepted medical practice. However, Paolucci and Pereira Neto (2021) highlight limitations in this definition, arguing that widely accepted medical practices do not always reflect the most up-to-date scientific evidence. To address this issue, they propose redefining accuracy as the degree to which information aligns with the best available scientific evidence. The authors further emphasize the lack of "[...] evidências de revisões sistemáticas na construção de indicadores de avaliação [...]" (Paolucci; Pereira Neto, 2021, p. 1003, our translation)[2].

The quality of online health information is a crucial concern, particularly in the context of COVID-19 and the widespread circulation of misinformation. In response to this challenge, this study investigates the accuracy of information circulating in a COVID-19 Online Health Community (OHC). Specifically, we analyzed posts shared in a Facebook group called *Eu já tive COVID-19* (I Have Had COVID-19), evaluating whether the content aligned with the most relevant and up-to-date scientific evidence on COVID-19 at the time. The following sections outline the study's methodology and findings.

METHODOLOGY

This study examined the online community (OC) Eu já tive COVID-19 (I've Had COVID-19), a public Facebook group created in April 2020. This group was established to facilitate experience sharing among individuals who had contracted COVID-19 and to disseminate related content. This OC was selected based on three key factors: size, activity level, and data accessibility. First, with over 16,000 members, the group provided a substantial pool of participants. Second, the daily publication of new posts and comments generated a significant volume of material for analysis. Third, as an open-access community, all published content was publicly visible.

The first phase of the study involved collecting posts and their corresponding comments published in the OC between November 2021 and January 2022. A total of 136 posts and 2,156 comments were gathered and systematically organized in a spreadsheet. After structuring the dataset, messages unrelated to COVID-19 were excluded from the analysis.

Next, the content was adapted to develop an evaluative tool to facilitate the assessment process. OCs serve as spaces for both synchronous and asynchronous communication, often resembling informal conversations. Typically, discussions begin with a post and continue in the comment section (Hah *et al.,* 2021). Given this dynamic, responses in these online interactions are often brief and direct.

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2   Original: "[...] evidence from systematic reviews in the construction of evaluation indicators [...]" (Paolucci; Pereira Neto, 2021, p. 1003).

For instance, in post P584, a user asked: "Guys, I just tested positive. What should I take for the fever? The doctor is only available tomorrow. For six days, I've been taking 750 mg of paracetamol, but my blood pressure dropped." The post was written as a continuous block of text without punctuation. In response, another participant simply commented: "Dipyrone."

If this reply were assessed in isolation to determine whether evidence supports the use of dipyrone during the acute infectious period, its meaning would be ambiguous due to the lack of context. To address this issue, the evaluative tool was designed to incorporate contextual elements, ensuring a more precise assessment of the information exchanged within the OC.

Thus, we found it necessary to adapt the systematized and selected content for evaluation. This adaptation involved converting the messages into affirmative sentences while considering the context of the publication or comment. In total, 119 affirmative sentences were created from the systematized material. After this stage, we observed that some sentences were similar. To refine the content, we merged sentences that conveyed analogous statements. By the end of this process, we had 61 sentences.

Next, we performed a thematic analysis, a qualitative method used to identify patterns or themes that contribute to the description and understanding of a given dataset (Braun; Clarke, 2006).

To determine the themes, we carefully read the sentences and developed a coding structure based on observations of the material. We assigned each sentence a theme according to the study's coding framework. This categorization resulted in seven themes: 'preventive measures,' 'post-COVID,' 'vaccination,' 'suspected cases,' 'diagnosis,' 'monitoring and treatment,' and 'infection.'

The 'preventive measures' theme comprised 4 sentences; 'post-COVID,' 7 sentences; 'vaccination,' 25 sentences; 'suspected cases,' 2 sentences; 'diagnosis,' 3 sentences; 'monitoring and treatment,' 12 sentences; and 'infection,' 8 sentences.

We developed an online tool to assess accuracy. This tool transformed the classified sentences into evaluative items, organized by theme. We further divided some items into sub-items to facilitate evaluation. The resulting assessment tool contained 108 items and sub-items, distributed as follows: 4 related to 'preventive measures,' 39 to 'post-COVID,' 31 to 'vaccination,' 2 to 'suspected cases,' 3 to 'diagnosis,' 12 to 'monitoring and treatment,' and 17 to 'infection.'

After constructing the tool, we began assessing the accuracy of COVID-19 information circulating in the online community. For this evaluation, we used *DynaMed Plus* – an evidence-based clinical resource that synthesizes peer-reviewed medical literature to identify clinically relevant, up-to-date guidelines (DynaMed, 2020a). Recognized as one of the most authoritative scientific evidence aggregators (Paolucci, 2020; Bradley-Ridout *et al.,* 2021), *DynaMed Plus* provides reliable and precise clinical data on diseases and health conditions. Our goal was

to determine whether COVID-19 information shared in the analyzed online health community (OHC) aligned with the most current and robust scientific evidence available on the platform during the study period (EBSCO, 2022).

Each tool item included four response options: correct, partially correct, incorrect, and no available evidence. We compared the content of each item to *DynaMed Plus* guidelines. We classified items as correct only if they fully matched the platform's evidence. Items aligning partially with DynaMed's data received the partially correct label, while those contradicting the platform's recommendations were marked incorrect. For items lacking corresponding evidence in DynaMed, we assigned the no available evidence label, as we could not assess their accuracy.

The following section details the evaluation results.

ANALYSIS AND DISCUSSION OF RESULTS

Our evaluation assessed the alignment between COVID-19 content shared in the online health community (OHC) Eu já tive Covid-19 ("I've had COVID-19") and the most current scientific evidence available in the *DynaMed Plus* clinical summary. The results not only map the quality of information circulating in this OHC but also reveal the level of COVID-19 misinformation to which users were potentially exposed in the digital space.

Within the dataset, we identified seven COVID-19-related themes: prevention, infection, post-COVID, vaccination, suspected cases, diagnosis, and medical monitoring/treatment. Among these, post-COVID (36.1%), vaccination (28.7%), and infection (15.7%) dominated discussions during the study period. Themes with minimal representation included medical monitoring/treatment (11.1%), prevention (3.7%), diagnosis (2.8%), and suspected cases (1.9%) (**TABLE 1**).

TABLE 1 – Presence of themes in the analyzed content

Themes	Recurrence in the analyzed material
Pós-covid	36,1%
Vaccination	28,7%
Infection	15,7%
Medical attention and treatment	11,1%
Prevention	3,7%
Diagnosis	2,8%
Suspected cases	1,9%

Source: Prepared by the authors (2022).

The prominence of 'post-COVID,' the most discussed topic among participants, suggests that individuals used the OSC to post, share, or seek information about their health status after the acute infectious phase of COVID-19. This may be linked to the disease's potential to cause lingering symptoms and long-term effects, even after the infection resolves

(Akbarialiabad *et al.,* 2021). The physiological and psychological changes experienced in the medium and long term due to COVID-19 (Wu, 2021) may have motivated individuals facing these challenges to seek information. Thus, within the analyzed OSC, 'post-COVID' emerged as a significant theme for a portion of participants, likely those dealing with persistent symptoms or sequelae and searching for ways to manage their condition.

he high level of engagement with 'vaccination' suggests strong interest in this topic, particularly concerning issues such as adverse reactions, side effect management, vaccine efficacy, protection and benefits, vaccination procedures, regulations, restrictions, and immunity. This interest is understandable, given that vaccination is a crucial protective measure against COVID-19 and a fundamental tool for effective disease prevention.

It is important to note that vaccination has been a major target of misinformation (Naeem; Bhatti; Khan, 2021). The sociopolitical climate further fueled the anti-vaccine movement in the country, fostering doubt and hesitation among certain segments of the population regarding COVID-19 vaccination (Oliveira, 2020). One notable example is the statement made by then-President Jair Bolsonaro: "se você virar um jacaré, é problema seu" (AFP, 2020, *online*)[3]. Faced with widespread misinformation and false content about vaccination, some participants may have turned to the community for discussion, contributing to its high prevalence during the analyzed period.

Regarding the level of accuracy identified in the evaluation, **TABLE 2** summarizes the results.

TABLE 2 – Relationship between evaluated items and accuracy percentage

Accuracy percentage of the information circulating in the analyzed OSC		
Accuracy classification	Total items	Accuracy percentage
Correct	39	36,1%
Partially correct	20	18,5%
Incorrect	12	11,1%
No available evidence	37	34,3%
TOTAL	**108**	**---**

Source: Prepared by the authors (2022).

Our analysis revealed that 36.1% of the COVID-19-related content circulating in the online community during the study period aligned fully with the most up-to-date scientific evidence available on *DynaMed Plus*. While this proportion exceeded rates of partially correct (18.5%) and incorrect (11.1%) information, less than half of the shared content adhered strictly to current evidence, suggesting variable accuracy levels within the community.

Pereira Neto et al. (2022) argue that reliable health information should meet a minimum accuracy threshold of 60%. Although our study focused solely on accuracy as a quality metric, the findings imply that participants in this online health community (OHC) lacked consistent access to scientifically validated COVID-19 information.

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3   Translation: "If you turn into an alligator, that's your problem." (AFP, 2020, *online*, editorial translation).

The overall accuracy rate observed here reinforces well-documented concerns about substandard COVID-19 information quality in digital spaces (Bin Naeem; Kamel Boulos, 2021; Pereira Neto *et al.,* 2022). Such environments often prioritize engagement over rigor, amplifying misleading or false claims (Pereira Neto *et al.,* 2022). During the pandemic, social media platforms became conduits for deliberate misinformation, including conspiracy theories, pseudoscientific therapies, and unproven prevention strategies (Naeem; Bhatti; Khan, 2021). In our study, 29.6% of the OHC's content (11.1% incorrect + 18.5% partially correct) deviated from scientific consensus, exposing participants to health risks.

Furthermore, intentionally false information about COVID-19 has circulated widely on social media during the pandemic. A large amount of content with false statements, conspiracy theories, or pseudoscientific health therapies about the treatment, prevention, and spread of the virus has been disseminated on these platforms (Naeem; Bhatti; Khan, 2021). In the assessment conducted, it was identified that more than a third of the information circulated in the analyzed COS is totally (11.1%) or partially incorrect (18.5%). In this sense, participants in the online environment could have come into contact with misinformation about COVID-19, accessing false or inaccurate content about the disease.

This exposure likely compromised individuals' well-being. Misinformation in the OHC promoted dangerous practices such as self-medication without medical oversight, unvalidated "early treatment" protocols, vaccine skepticism, and disregard for preventive measures (Falcão; Souza, 2021; Galhardi *et al.,* 2020). Such content may have encouraged high-risk behaviors, potentially exacerbating viral transmission and undermining public health efforts.

False or inaccurate content further fueled panic and denialism toward essential pandemic prevention measures (Falcão; Souza, 2021), a dynamic likely amplified among OHC participants given the prevalence of misinformation in the community.

As **TABLE 1** illustrates, 34.3% of the evaluated content lacked supporting evidence in DynaMed's COVID-19 guidelines. This indicates that one-third of the OHC's discussions were not grounded in scientific evidence, a pattern potentially tied to the proliferation of anecdotal knowledge in digital health spaces.

Online health communities (OHCs) are primarily used for sharing personal health experiences through informal language. Consequently, they often prioritize experiential narratives – knowledge derived from lived experiences with illness rather than empirical research (Pereira Neto *et al.,* 2021). Unlike evidence-based scientific knowledge, which emerges from systematic methodologies, experiential knowledge reflects subjective interpretations of health conditions.

In the analyzed OSC, it is reasonable to assume that experiential knowledge was widely shared, as is common in other online communities. Consequently, participants may not have been primarily concerned with ensuring that the shared content was scientifically validated, as their focus may have been on exchanging personal experiences with COVID-19.

This could explain the percentage of information identified in the evaluation as lacking scientific evidence, suggesting that users were more inclined to share experiential knowledge about their condition rather than prioritizing scientifically verified information.

However, it is important to emphasize that the circulation of information without scientific backing carries risks for participants. Such content may contribute to misinformation about COVID-19, potentially leading to negative health outcomes (Falcão; Souza, 2021; Pereira Neto *et al.,* 2021).

Regarding the accuracy of information by theme, TABLE 2 presents the results obtained.

TABLE 3 – Accuracy percentage for the themes 'post-COVID,' 'vaccination,' and 'infection'

Theme	Classification	Total items	Accuracy percentage (by theme)
Post-COVID	Correct	12	30,8%
	Partially correct	4	10,3%
	Incorrect	0	0%
	No available evidence	23	58,9%
Vaccination	Correct	12	38,7%
	Partially correct	9	29%
	Incorrect	4	12,9%
	No available evidence	6	19,4%
Infection	Correct	8	47,1%
	Partially correct	1	5,9%
	Incorrect	4	23,5%
	No available evidence	4	23,5%

Source: Prepared by the authors (2022).

Our analysis found that 58.9% of post-COVID-related content lacked scientific evidence, indicating widespread circulation of unsubstantiated claims within the online health community (OHC). This gap likely stems from post-COVID's status as a novel health condition, with limited research and evolving evidence during the study period (Yong; Liu, 2021).

For vaccination-related content, 19.4% lacked supporting evidence, while 12.9% contained inaccuracies. These findings suggest OHC participants were routinely exposed to vaccine misinformation, reflecting broader societal debates and distrust amplified during the pandemic.

Analysis of infection-related content revealed that 47% of posts were either inaccurate (23.5%) or unsupported by evidence (23.5%). Nearly half of this material deviated from current scientific consensus, potentially compromising individuals' health decisions.

The theme 'diagnosis' had the highest percentage of incorrect information (33%), while 'post-COVID' had the highest proportion of content without corresponding scientific evidence on the *DynaMed Plus* platform, accounting for 59% of the evaluated information.

Across all themes, 63.7% of the analyzed information was either incorrect or lacked a scientific evidence base. These findings indicate that the overall accuracy of COVID-19 information in the analyzed OSC is relatively low. While the OSC serves as a space for exchanging COVID-19-related information, individuals using this platform may be exposed to misinformation about their health status, with no assurance that the information they access aligns with the most reliable and up-to-date scientific evidence.

CONCLUSIONS

Information and communication technologies are deeply embedded in modern life. Online health communities (OHCs), in particular, create unique spaces for accessing, producing, and sharing health-related information, fostering peer-to-peer support among individuals managing diagnoses or health concerns. However, the variable quality of information in these environments risks harming participants' well-being and distorting health-related decisions. This study evaluated one critical dimension of information quality – accuracy – within a Facebook-based OHC focused on COVID-19.

Our analysis revealed that post-COVID and vaccination emerged as central themes in the OHC's discussions. Medium- to long-term health sequelae, persistent symptoms, and vaccine-related uncertainties drove their prominence during the study period.

Only 36.1% of the OHC's COVID-19 content aligned fully with the most current scientific evidence from *DynaMed Plus*, indicating that less than half of the shared information met rigorous accuracy standards. These findings underscore significant variability in the reliability and accuracy of health information within digital peer networks.

Furthermore, the presence of incorrect information in the OSC was evident, reinforcing concerns about the digital space as a potential source of inaccurate or misleading content. Participants may have been exposed to false or unreliable information about COVID-19, which lacked scientific credibility.

As a result, individuals' health conditions may have been compromised, as decisions based on incorrect or misleading content could negatively impact their well-being and quality of life. The circulation of misinformation, as observed in the analyzed OSC, is particularly concerning, as it could have adverse health effects, reinforce denialist attitudes toward COVID-19 prevention measures, or even incite panic (Falcão; Souza, 2021; Pereira Neto *et al.,* 2022).

Additionally, 34.3% of the analyzed content had no corresponding scientific evidence. This suggests that participants in this OSC were not necessarily prioritizing scientifically

validated information. Instead, the content shared may have been largely influenced by experiential knowledge – information derived from individuals' lived experiences with COVID-19 – rather than evidence-based sources (Pereira Neto *et al.,* 2021).

Overall, the study found that the accuracy of information circulating in the OSC was not high, as less than half of the analyzed COVID-related content was fully aligned with the most current scientific evidence at the time. While OSCs facilitate valuable exchanges of information, they also expose participants to incorrect or intentionally misleading content.

It is important to acknowledge some limitations of this study. The online group analyzed is no longer active, which restricts the scope of analysis to the material collected up to that point. Additionally, the study was limited to evaluating posts from a single COVID-related OSC during a specific period. Different results might have been obtained if the study had included posts from multiple periods or additional online communities.

Despite these limitations, this research makes significant contributions to the field of health information and communication. One key contribution is the use of clinical information summaries in the evaluation process. Paolucci (2020) highlights the importance of assessing the accuracy of online information based not on expert consensus but on the best and most current scientific evidence available, which is systematically compiled in clinical information summaries. These summaries consolidate the most relevant and evidence-based clinical content. In this study, adopting a clinical summary platform such as *DynaMed Plus* as a reference for evaluating the accuracy of online COVID-related information represents an innovative approach.

Another significant contribution lies in the study's focus on content shared within online communities. Research on online health information has largely focused on the evaluation of websites (Ghani *et al.,* 2021; Vetter *et al.,* 2018) and the quality of information disseminated on social media (Gabarron *et al.,* 2021). However, online communities have not been a primary focus in this field, and little research has examined the quality of the information accessed and shared in these spaces.

In this regard, the present study not only proposes a method for evaluating information circulating in OSCs but also provides novel insights into a digital environment that, despite its increasing relevance as a source of information for patients, remains underexplored in research on the quality assessment of online health information.

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