ORIGINAL ARTICLE

In retrospect: intensivists and COVID-19 pandemic on day zero. An analysis of communication exchanges on WhatsApp

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ABSTRACT

Objective: To describe and analyze, at various levels, the communication exchanges that took place in a group chat of intensivists using the WhatsApp instant messaging application during the first stage of the COVID-19 pandemic, specifically on the day the first case was confirmed in Mexico. An intense situation showing the three dimensions of the theoretical framework is stood out.
Materials and methods: A qualitative research of WhatsApp messages shared between 239 intensivists at the beginning of the pandemic, specifically throughout February 27, 2020. A narrative analysis was used to interpret a fragment of a chat. A schema with three dimensions (*analysis of shared information*, *standards of social action in COVID-19 patient care* and *emotional expressions*) was developed to code and classify the messages.
Results: The communication exchanges via WhatsApp made it possible to give meaning to the emerging knowledge about COVID-19 in the narrative plots. They also influenced the implementation of appropriate actions in hospital environments and helped modulate emotions in front of the pandemic. In addition, it fostered bonds of solidarity and empathy between intensivists to face personal and social suffering with resilience.
Conclusions: The chat messages reflected human relationships and the deep concerns of people in crisis situations. The study provided insight into the forms and meanings of communication exchanges with the use of technological devices in times of crisis to guide the implementation of actions in emerging situations such as the COVID-19 pandemic. WhatsApp responded to the need for information, with scientific and truthful data, about the pandemic. It was noted that intensivists benefited from instant messaging by cooperating in critical situations and experiences within the context of an evolving health crisis.

Keywords: Digital Technology; COVID-19; Critical Care; Information Dissemination; Capacity Building; Emotions (Source: MeSH NLM).

INTRODUCTION

The WhatsApp chat of critical care specialists served as a resource for sharing information, consulting doubts and clinical cases, and fostering professional relationships. By March 2020, the group had been operational for six years and included over 239 intensivists across the country. During the COVID-19 (coronavirus disease 2019 caused by SARS-CoV-2) pandemic, this messaging service gained scientific, clinical and social relevance due to the challenges faced in intensive care units (ICUs) posed by the overcrowding of patients requiring intubation.

This paper describes and analyzes, at various levels, the communication exchanges within a group during the first stage of the pandemic, specifically on day zero (February 27), when the first COVID-19 positive patient was confirmed in Mexico.

On information, safety and emotion

The year 2020 marked a turning point in human history: the COVID-19 pandemic transformed social practices and accelerated organizational and technological processes. The outbreak of COVID-19 compelled institutions and government health authorities to suspend face-to-face activities to maintain social distancing and reduce disease transmission.

Technological developments in the 21st century accelerated at an unprecedented rate. The Internet became indispensable and mobile devices, with all their numerous applications, facilitated grouping and interpersonal bonding processes. One of the most widely used communication applications was, and remains, WhatsApp, which emerged

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in 2009 [1] as an instant messaging application for sending and receiving images, videos, audios, documents, among other functions.

Social networks, in general, and social software, in particular, have mediated learning and knowledge development [2]. However, while WhatsApp facilitates communication, its use can also complicate interpersonal relationships and communication flow within groups. Some disadvantages include loss of information in large groups [3], simultaneous discussions on multiple topics, group conflicts for various reasons [4] and transmission of irrelevant content [5]. Additionally, the application's limited capacity to convey body language and context are some of its major drawbacks [6]. The communication exchange in the application is part of larger networks whose dynamics operate on virtual nodes [7]. Within this activity, content consumption occurs in population sets with specific characteristics, where both the quantity and quality of data acquire particular features.

The WhatsApp chat of intensivists reached a pivotal moment with the emergence of COVID-19. Physicians in ICUs anticipated the arrival of critically ill patients needing intubation, necessitating a reorganization of medical care processes. This situation can be interpreted through Goffman's notion of social interaction [8], wherein events occur within specific environments. In other words, in a situational framework, participants assume roles and premises based on rules that allow interactions to develop with a degree of normality. The hospital transformations prompted by COVID-19 triggered events among health unit participants. The sequence of these events and the organization of statements on WhatsApp defined spaces of meaning and intersubjectivity [9]. There were continuities and discontinuities, changes, ruptures, shifts from one field to another, dislocations, displacements and transformations. The link between a singular experience and language was the meaning—enabling understanding on an immanent level by condensing the past, present and imagined future—expressed in a shared language [10].

In addition to the exchange of information, the feelings of the participants were expressed in this WhatsApp group. During the pandemic, when building and maintaining social ties were challenging, cognitive, interactional and emotional adjustments were key elements in considering affectivity in the field of health. Individual behaviors were approached within a social matrix where institutional conditioning and daily interactions were interwoven [11]. Affective discomfort was transmuted despite the emotional regulation inherent to the medical profession, as reflected in the participants' testimonies.

The WhatsApp group messages allowed for characterization and signification of, for example, the existing relationships between the material conditions in which intensivists worked in their hospitals and the social construction of the fear of death during the pandemic. Goudsblom [12] and Wouters [13], in their studies of contemporary fears, explained that emotional experiences are positioned in the social sphere. Constantly facing situations of uncertainty regarding life and death confronts physicians with the possibility of their own death [14]. In human relationships during a pandemic, fears and feelings of vulnerability prevailed, where social worth was built on fragile foundations. There was a relationship between the subjects' perceptions and the changes in social sensitivity thresholds [15].

How to analyze the contents of WhatsApp chats?

For intensivists, the WhatsApp group served as a node where the global, local and personal converged. The guiding question of the study was: what types of communicative exchanges took place in the WhatsApp communication platform of the Mexican intensivists' group during the COVID-19 pandemic? The objectives aimed to describe and analyze: a) how intensivists incorporated globally circulating information and scientific knowledge about the COVID-19 pandemic into the WhatsApp group, b) the local situations referred to by the participants related to their positions in the hospital and ICU regarding institutional reorganization for the care of COVID-19 patients, as well as occupational safety, resources and supplies needed for medical care (diagnostics, treatments, medications, etc.), and c) how personal emotions were shared in the WhatsApp messages, creating an intersubjective space based on a collective professional ethic with values, beliefs, preferences and behavioral patterns specific to the group of intensivists.

MATERIALS AND METHODS

Study design and population

Regarding the arrangement of the communicative exchanges within the WhatsApp group of intensivists, the study employed a qualitative methodology. A retrospective analysis of textual messages and other materials shared in the communicative exchanges of the WhatsApp group was performed. The "chat" was regulated by the main administrator, who frequently clarified what was permitted and prohibited in the group's interactions. The 239 participants (155 males and 84 females), who participated voluntarily, worked in ICUs in second- and third-level hospitals. The physicians were from 40 cities across 26 states of the Mexican Republic, with 108 residing in Mexico City.

Variables and measurements

Becoming familiar with the dynamics of instant message exchanges required significant time and effort from the researchers, who analyzed these written messages. After

reading and interpreting the contents, a scheme with the relevant dimensions (*analysis of shared information, standards of social action in COVID-19 patient care* and *emotional expressions*) was developed to code and classify the material (Table 1). The guiding questions in the scheme helped organize the data and give meaning to the messages.

Table 1. Examples of the three dimensions, guiding questions and testimonies using the research instrument

Dimensions	Guiding question	Examples of WhatsApp messages
1. Analysis of shared information	What type of information is being shared, and how do you ensure the reliability of the sources?	"It is necessary to follow WHO and CDC recommendations and to contain the first case to prevent a situation like what happened in Italy. There is no cure, and mortality is higher in the elderly and patients with comorbidities. Intensivists will not see patients outside the ICU, so we must focus on the knowledge and management of ARDS."
2. Standards of social action in COVID-19 patient care	What concerns did intensivists have regarding the safety and protection of healthcare personnel, protocols for patient care and treatment, shared clinical cases, and management of human and material resources, especially the lack of supplies?	"Is there a plan?" "How should we treat infected persons?" "How are we going to prevent the spread of the virus to other areas of the hospital?"
3. Emotional expressions	What were the participants' moods and mental states?	"I think we are not prepared." "I'm already scared." "Please, let's not panic."

Abbreviations: WHO (World Health Organization), CDC (Centers for Disease Control and Prevention), ICU (intensive care unit), ARDS (acute respiratory distress syndrome).

Statistical analysis

The procedures followed in the virtual fieldwork [16] were as follows: first, the content from the WhatsApp communication platform was migrated to Word documents for text analysis. During this transfer, materials accessible only within the application were lost. A total of 24 weeks were analyzed, corresponding to the first stage of the pandemic in Mexico. Week one began on January 18 and week 24 concluded on July 12. Afterwards, the material was coded and classified. Two researchers (LHS and SAM) spent seven months classifying the material using the specified instrument. Once the content themes were clearer, the theories presented in the conceptual framework were employed to aid in the analysis and interpretation of the information. Finally, the theories, WhatsApp conversations and the researchers' analysis were triangulated [17].

For the approach to communicative exchanges, it was assumed that individuals participated in events and constructed narratives to provide meaning and reinforce their identities and positions within the described situations. Human agency and imagination influenced what was included and excluded in the narratives [18]. Therefore, the chat contents represented interpretable depictions of situations and experiences. Studying these narratives, grounded in place, time and interpersonal experience, allows for an exploration of the sociocultural contexts of the participants. Given the epistemological approach to

the material analyzed from an interactional perspective, the analytical interpretations were partial, aiming for credibility (not absolute truth) and seeking to enhance understanding of the experiences and situations described in the communicative exchanges.

Ethical considerations

On May 23, 2020, the same WhatsApp chat was used to solicit informed consent from group participants for educational and research purposes. The group administrator communicated the study's objective, "I am writing to the entire group to request your permission to use the data and conversations in this group for educational purposes. I have discussed this project with educational researchers at UNAM. Should any article or writing be produced, authorship will be shared as 'On behalf of the group...' Please let me know if you disagree. Once the study and the research question are complete, the results will be shared with you via this platform." Fourteen individuals responded affirmatively, 222 read the message but did not reply and three did not read it; there were no objections to the use of the contents. Participants' anonymity was ensured by using their initials, and data protection confidentiality was maintained to prevent misuse. The research protocol was approved by the Ethics and Research Committee of the School of Medicine at Universidad Autónoma de México (UNAM) and registered with the Research Division under number FM/DI/011/2021.

RESULTS

In the WhatsApp chat, intensivists conveyed the stresses, complications, hospital reorganization and pressure they faced in the clinical context of the ICU. Although they shared a substantial amount of information, it was not always clear how they processed it, as there was little discussion about the topics covered in scientific articles. Their local experiences evolved from a geographically-based level to a virtual platform. Thus, in short messages, they exchanged information and formed a community aimed at solidarity amidst adversity. For data analysis, a segment of the communicative exchanges from the chat, depicting an intense situation (day zero), was selected to illustrate how the three analytical dimensions of the theoretical framework were represented (Table 2).

Table 2. Fragments of the communicative exchanges on day zero according to the three analytical dimensions

Dimensions	Examples of WhatsApp messages
1. Analysis of shared information	[21:17:26] EE (F, Toluca, EdoMex): Confirmed at INER. [21:17:27] EE (F, Toluca, EdoMex): I think the first case is positive. [21:17:27] EE (F, Toluca, EdoMex): Yes, confirmed at INER. [21:18:00] JGR (F, CdMx): Is it real? [21:18:08] EE (F, Toluca, EdoMex): Good evening. I got this information from another chat. Do you know anything about it? [21:18:25] EE (F, Toluca, EdoMex): They say the announcement isn't out yet. That's what they're saying, but it hasn't been released or uploaded yet. [21:19:26] EM (M, CdMx): Report from Dr. B.: Dr. Q, true information will be available tomorrow from the director of INER. There's a suspected case; test results are awaited. [21:25:14] EE (F, Toluca, EdoMex): Thank you. [21:34:08] EM (M, CdMx): Confirmed with the director. INDRE will corroborate. Greetings. [21:43:58] JA (M, Oaxaca, Oax): From the State of Mexico or where? [21:44:54] EM (M, CdMx): First case of COVID-19 at INER confirmed. The patient came from Italy and was in contact with infected people there. They were already tested positive at INER. Samples will be sent to INDRE for a third verification. [21:47:36] LAG (M, CdMx): UIES-APV-COVID19-SARSCoV2-v06-27Feb2020.PDF • 1 page [document omitted].

Dimensions	Examples of WhatsApp messages
2. Standards of social action in COVID-19 patient care	[22:41:52] JHG (M, SLP): My question is how did we get the probe so quickly? Where did you isolate it, and how did INER get it? I'm seeing a patient tomorrow who came from South Korea and wants to know if they have coronavirus. I don't know if they have symptoms or if it's just panic. I'm in San Luis Potosí and, as far as I know, there are no tests here. [22:42:05] RC (M, CdMx): Don't see him. Tell him to stay at home. [22:44:36] JHG (M, SLP): I haven't spoken to the patient yet. I hope it's just panic, but people will start coming to the office and ER with these concerns, just like in 2009. [22:45:42] AM (M, Tab): Voluntary isolation. [22:45:51] NAA (F, CdMx): Correct.
3. Emotional expressions	[23:01:15] MIP (M, CdMx): Serious question: Who has supplies like mask covers and suits in your unit? [23:02:38] RC (M, CdMx): Nobody. Let's not panic. [23:03:19] NAA (F, CdMx): I'm already scared. [23:20:46] ACh (M, CdMx): In 2009, we had no information about H1N1, we organized ourselves and got ahead; now we can do it again. Even if other data suggest the pandemic didn't exist, those of us who experienced it know the reality. Let's support each other and keep communicating. Hand washing! [23:32:33] SH (M, CdMx): The second test is expected. [23:36:31] RC (M, CdMx): The second test is out and it was positive as well. [23:44:30] SH (M, CdMx): And what did you think, that it was never going to arrive to Mexico? Being a transit country with high tourist and commercial flow, are people going to be stopped? Mexicans in China asked to come home first. Now, we need to be more prepared than ever. Every patient with fever and flu symptoms in CdMx will be considered for coronavirus 19.

Abbreviations: EdoMex (State of Mexico), INER (Instituto Nacional de Enfermedades Respiratorias – National Institute of Respiratory Diseases), CdMx (Mexico City), INDRE (Instituto de Diagnóstico y Referencia Epidemiológicos – Institute of Epidemiological Diagnosis and Reference), Oax (Oaxaca), COVID-19 (coronavirus disease 2019 caused by SARS-CoV-2), SLP (San Luis Potosí), Tab (Tabasco), H1N1 (Influenza A H1N1 virus), F (female), M (male).

Elucidation of the communicative exchange

The first section of the fragment was informative, detailing the confirmation of the first positive case of COVID-19 in Mexico. From the messages, it was possible to interpret that the procedure for confirming suspected cases was as follows: the samples were sent to INER, where specific tests were performed to either confirm or refute the presence of COVID-19. If the initial tests were positive, they were retested to corroborate the result. Finally, a third confirmatory test was conducted at INDRE to eliminate any doubt. From this point on, the information could be considered "true information." In the group, reactions to the news were diverse; some inquired about the test at INER, asking whether it used specific COVID-19 reagents. Dr. EC emphasized the importance of the epidemiological relationship as a reliability criterion: "risk plus positive test." The second section was relevant because of two aspects: first, the center-margin geopolitical relationship, and second, the vulnerability of physicians to patients with COVID-19. The text raised issues of inequality in access to diagnostic resources and procedural guidelines for managing care of patients infected with the virus.

Finally, in the third section, the emotional overflow and the consequent regulation of behavior were made visible, alluding to the expected attitude of physicians in the face of the contingency. Expressions such as "I'm already scared" were shared, while Dr. ACh tried to encourage colleagues by recalling the experience of 2009 with the severe acute respiratory syndrome (SARS) caused by the influenza A H1N1 virus. The last intervention of the selected fragment was also revealing; Dr. SH wrote, "The second test is expected," perhaps as an attempt to stem the imminent avalanche of pandemic effects or to deflect the sense of fear gripping the participants' consciousness.

DISCUSSION

Intensivists' narratives: from reality to virtual textual representations

The communicative fragment analyzed allowed us to address the objectives set out in the three analytical dimensions. The first section, on the confirmation of the first patient with COVID-19, demonstrated how the event was co-constructed within frames of meaning common to the intensivists, who lent credibility to the information. Institutional referents such as INER, INDRE, WHO and CDC were synonymous with scientific reliability and assurance. In the initial communicative exchange of the presented fragment, representations of a socially shared fact emerged, which was considered a milestone. The "fact" was not isolated; it was interwoven with circulating social knowledge that was appropriated and recovered by constructing narrative plots imbued with subjective and objective meanings capable of being shared. The various communicative codes circulated inside and outside the WhatsApp group in different discursive registers—global, local and personal. When combined, they were reconfigured [19], allowing for innovation in knowledge and its application to unprecedented situations, although not without emotional adjustments.

In the second transcript, patterns of the practical implications mentioned in the second objective were shown. In an exercise that transitioned from deductive to inductive reasoning and vice versa, the physicians took the shared information to their local settings and questioned aspects of their own clinical environments. The physical site where concerns converged was the ICU. They discussed topics such as equipment for care, supplies for the protection of healthcare personnel, safety in the clinical environment, appropriate medical procedures, clinical cases, medications and more. The lack of guidelines increased uncertainty about the scope of hospital reorganization and resources for medical care.

Raising questions and discussing future scenarios on WhatsApp caused distress and led to confronting the most extreme unknown: death by infection. Conversations reflected a dialectic that fluctuated between the imaginary and the real, i.e., the manageable tasks of the ICU. The narrative structure of these dynamics was repetitive in the communicative exchanges: first, someone would present a chaotic and catastrophic scenario, followed by expressions of distress or panic. This was then mitigated by the intervention from someone who redirected the messages towards manageable aspects, emphasizing professional ethics. These statements showed how emotions entangled in the intersubjective virtual space of the WhatsApp group, with collective discomfort being shared. As indicated by García et al. [20], the exchange of feelings can lead to emotional feedback cycles which, along with transmitted emotional contagion, can become a set of digital group emotions [21], accelerated by technology and social networks [22]. The emotions spread during this crisis were predominantly negative, although positive feelings did occur and should be acknowledged [21]. Blasi et al. [23] observed that positive emotions decreased over time due to an increase in negative emotions as the outbreak impacted the healthcare system.

Instant messaging communication had the capacity not only to contain catastrophic scenarios but also to foster bonds of solidarity and empathy, enabling resilient coping with personal and social suffering. Physicians did not find the answer to the health crisis in a transcendent being but rather in professional ethics. They delimited the scope of their action to the ICU, promoting attitudes and values in their clinical performance such as order, preparation, logic, discipline and teamwork. By sustaining these principles in practice, the overwhelming uncertainty of the pandemic was confined within the symbolic boundaries of the ICU.

In conclusion, it was confirmed that what happened in the virtual space reflected human relationships and the deep concerns of people in crisis situations. The WhatsApp responded to the need for information, providing scientific and truthful data about the pandemic at global, local and personal levels, as well as the protocols to manage it [24]. The virtual group also served as a node in which different local hospital realities converged, where doubts, criticisms, shortages and other problems were raised and echoed in the responses of the chat colleagues. In that sense, the conversations recorded were a reflection of what was happening at the national level. Finally, intersubjectivity was also interwoven, albeit in a fragmented manner, in the instant messages exchanged. The social representation of fear was reconfigured repeatedly as events unfolded, moving from awareness of vulnerability to imminent death to the implementation of manageable professional guidelines and norms to contain the threat. Emotional maladjustments were manifested in the WhatsApp group and were an intrinsic part of the professional community studied.

Beyond the analyzed contents, it is possible to state that

the WhatsApp instant messaging application was used as an important means of communication in the professional life and hospital environment by physicians to communicate and share data among peers [25]. Moreover, it constituted a useful and easy tool to quickly share information [26]. Intensivists shared scientific literature and clinical cases, requested and sent data as images or videos, and answered urgent questions about patients, among other things [27]. It was also evident that they benefited from cooperating in critical situations and sharing experiences within the context of an evolving health crisis [28,29].

Acknowledgements: We extend our gratitude to the intensivists who are part of the WhatsApp group for granting their consent and allowing us access to and use of their communicative exchanges during 2020. Special thanks to Dr. Gilberto Vázquez de Anda, the group administrator, who is also representative of the WhatsApp Intensivist Collective.

Author contributions: LHS conceptualized the original idea, analyzed and interpreted the results, and drafted the manuscript; SMAM collected and analyzed the data; ICZ and MFRH reviewed and refined the manuscript; and GFVA designed the study and managed permissions. All authors approved the final version of the article.

Funding sources: The article was funded by the authors.

Conflicts of interest: The authors declare no conflicts of interest.

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Reception date: October 2, 2023
Evaluation date: December 1, 2023
Approval date: December 1, 2023

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https://doi.org/10.24265/horizmed.2024.v24n1.03