

The Power Of Infographics In Times Of Crisis

Henrique Chiarini Batistella¹, Bruno Michelassi Bernardes De Oliveira¹,
Bruna Granig Valente¹, Aline Cremasco Rocha¹, Cintia Kelly Bittar^{1,2}

¹medicine College Of Puc Campinas, Brazil

²puc Campinas Hospital, Brazil

Abstract:

Background: The COVID-19 pandemic has brought several uncertainties and insecurities about sources of information. In this way, the need to have a way of disseminating knowledge that was easy to understand and could be quickly disseminated became evident. Thus, there was the rise of infographics, which contain flashy images and simple texts, to meet this demand.

Materials and Methods: In this study, information was collected through Instagram (@combatec0vid), using the platform itself and the PUC Campinas Hospital website, by an IT professional. The infographics had been created by students from the Faculty of Medicine at PUC Campinas, who underwent training by IFMSA (International Federation of Medical Students Association) to ensure a high-quality standard to eliminate this bias in the research. In addition, citations from the inspiring papers in the infographics were collected for comparison.

Results: A total of 39 infographics were posted on Instagram, reaching 10,591 likes (50.19%), 2,713 comments (12.86%) and 7,797 shares (36.95%), totaling 21,101 interactions (100%), having the immunology as an area of greatest impact. On the PUC Campinas Hospital website, there were a total of 27,157 views, with the clinical and surgical areas having the greatest impact. The date was an important factor with Instagram having a higher number of views at the ending of the pandemic, while the Hospital website had a higher number at the beginning. The inspiring papers of the infographics had an average of 923 citations, with a minimum of 4 and a maximum of 2,755 citations, in two works it was not possible to be identified.

Conclusion: The infographic is a powerful knowledge dissemination tool, however, it must be in the right place to reach the best target audience.

Key Word: Infographics; COVID-19; information; Ease; Pandemic.

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I. Introduction

Undoubtedly, the COVID-19 pandemic brought immeasurable impacts, not only on public health, but on society, causing a chaotic moment in the political, economic, and social environment. Among the various crises, the vulnerability of the population to untruths was noted, which are quickly disseminated, often on social media. Therefore, several attempts were made to control the fake news and the search for better strategies to raise public awareness, thus the infographic gained notoriety. Infographics are figures in where there is a combination of texts and non-verbal elements, which can be images, graphics and sounds¹. Their function is to facilitate readers' dissemination and understanding through reduced texts with images, that are often eye-catching, using different geometric figures and a strong color palette, with the aim of retaining the public's attention. Thus, infographics, through social media, were considered one of the positive points for the population, among the impacts of coronavirus². The simple way of portraying complex and dense information with short texts and images brought a great positive impact to this tool that began to be widely used in the scientific world^{3,4}. This way, the most relevant information can reach people who are not part of the academic world more quickly and accurately, which is extremely important at a time of such instability as the COVID-19 health crisis.

II. Material And Methods

This observational retrospective study was carried out with previously published infographics (@combatec0vid) and on the PUC Campinas Hospital website, which were assembled by medical students from the PUC Campinas Faculty of Medicine.

Study Design: Observational Retrospective Study.

Study Duration: September 2023 to January 2024.

Subjects & selection method: All coronavirus-related infographics posted on the social network and website were collected, which previously went through rigorous selection, so that a high-standard infographic could be created.

Inclusion criteria:

1. All people who accessed the PUC Campinas Hospital website;
2. People who have an Instagram account and, consequently, accepted the terms of conditions by offering some data to the application.

Exclusion criteria:

1. People who did not accept sharing cookies on the PUC Campinas Hospital website;
2. People who don't have an Instagram account.

Procedure methodology

A retrospective study of the scope of infographics in relation to scientific papers was carried out. First, a selection process was carried out and then pairs were brought together, who underwent training organized by IFMSA (International Federation of Medical Students Association) to use the Canva. Subsequently, each pair was assigned a medical specialty together with a supervisor in the area, to create the infographics. They were published on the PUC Campinas Hospital website in an access area for the general population and another for health professionals. Furthermore, it was published on an Instagram profile (@combatec0vid). In this way, data from the website was collected by an IT professional, using the word “covid” as a filter, who manages the PUC Campinas Hospital website, and data from Instagram was collected from the platform itself.

III. Result

In this study, various data were collected to measure the reach potential of infographics, including via Instagram: likes, comments and shares via DM (Direct Message). Page views were evaluated on the PUC Campinas Hospital website. As for the original papers, inspiring the infographics, the citations were evaluated. In this way, they were divided into four major areas, including: immunology, clinical, surgical, and social medicine.

In total, 39 infographics were created, which on Instagram reached a total of 10,591 likes (50.19%), 2,713 comments (12.86%) and 7,797 shares on DM (36.95%), totaling 21,101 interactions (100%). The number of reactions by topic were Immunology, an area that had the highest number of research due to the discovery of the new virus and mainly to the controversy that occurred in Brazilian politics, 22 infographics were created, which obtained 9,850 likes (48.78%), 2,686 comments (13.30%) and 7,658 shares via DM (37.92%), totaling 20,194 interactions (100%). The posts that contained information mainly related to clinical areas, including Pulmonology, Cardiology, Endocrinology, Neurology, Pediatrics, Psychiatry, Intensive Care Medicine, Emergency Medicine, Hematology and Microbiology, created 12 infographics that reached 528 likes (80.99%), 18 comments (2.76%) and 106 shares via DM (16.25%), resulting in a total of 652 interactions (100%). Those that contained information mainly from the surgical area, including Otorhinolaryngology, General Surgery, Orthopedics and Dermatology, 4 infographics were created with a total of 164 likes (81.59%), 9 comments (4.48%) and 28 shares via DM (13.93%), generating a total of 201 interactions (100%). Finally, only one social medicine infographic was created, which received 49 likes (90.74%), 0 comments and 5 shares via DM (9.26%), totaling 54 interactions (100%).

Table no 1:The impact of the infographics on Instagram.

Themes	Areas	Date	Total	Likes	Comments	Shares
COVID-19 diagnosis and management	Pneumology	07/09/2020	29	29	0	0
Potential coronavirus effects on the Cardiovascular System	Cardiology	07/09/2020	38	35	3	0
Olfactory dysfunction in COVID-19	Otorhinolaryngology	07/09/2020	37	34	3	0
Endocrinological conditions of COVID-19	Endocrinology	08/08/2020	31	31	0	0
Neurological manifestations of COVID-19	Neurology	08/08/2020	33	26	1	6
Elective surgeries during the COVID-19 pandemic	General Surgery	08/08/2020	29	24	1	4
Multisystem inflammatory syndrome	Pediatrics	08/08/2020	30	27	0	3
Projection of psychiatric illnesses in the pandemic	Psychiatry	08/08/2020	38	30	0	8

Vaccine Week - How we develop Immunity	Immunology	10/19/2020	95	66	5	24
Vaccine week - Vaccines x COVID	Immunology	10/20/2020	82	51	4	27
Vaccine week - Viruses and viral vectors	Immunology	10/21/2020	63	50	2	11
Vaccine week - Nucleic acid vaccines	Immunology	10/22/2020	48	39	3	6
Vaccine week - Protein-based vaccines	Immunology	10/23/2020	60	51	0	9
Vaccine week - Vaccines x COVID	Immunology	10/27/2020	85	70	6	9
COVID clinical management protocol	Intensive Care Medicine	10/28/2020	109	88	2	19
Endocrine and metabolic aspects of COVID-19	Endocrinology	11/04/2020	112	77	6	29
Anticoagulation treatment with decreased mortality	Hematology	11/09/2020	41	33	4	4
Complication of thromboembolism in COVID-19	Emergency Medicine	11/18/2020	57	49	2	6
SUS and COVID-19	Public Health	11/24/2020	54	49	0	5
Replication of SARS-COV-2	Microbiology	12/15/2020	41	31	0	10
Orthopedics and COVID-19	Orthopedics	01/19/2021	64	55	2	7
Skin manifestations of COVID-19	Dermatology	01/21/2021	71	51	3	17
COVID-19 in pediatrics	Pediatrics	02/01/2021	93	72	0	21
CORONAVAC vaccine	Immunology	03/02/2021	300	198	4	98
OXFORD-ASTRAZENECA vaccine	Immunology	03/09/2021	257	162	5	90
MODERNA Vaccine	Immunology	03/16/2021	145	114	4	27
PFIZER vaccine	Immunology	03/24/2021	214	170	4	40
Should anyone who has had COVID-19 be vaccinated?	Immunology	06/04/2021	516	309	57	150
After I got the vaccine, do I no longer need to wear a mask?	Immunology	06/08/2021	2608	1259	389	960
After I took the vaccine, I no longer transmit the virus?	Immunology	06/10/2021	512	268	19	225
Is the vaccine mandatory?	Immunology	06/16/2021	4168	1626	578	1964
Can I be infected with coronavirus after having already had the vaccine?	Immunology	06/17/2021	1391	664	218	509
Can pregnant and postpartum women receive the COVID-19 vaccine?	Immunology	06/22/2021	928	477	89	362
"What does vaccine effectiveness mean? How can I understand these effectiveness percentages?"	Immunology	06/24/2021	1733	1037	194	502
Can I get another vaccine along with the COVID-19 vaccine?	Immunology	06/29/2021	351	203	46	102
What lasts longer: immunity caused by COVID-19 itself or the one produced by vaccines?	Immunology	07/01/2021	603	280	77	246
What happens if I don't get the second dose of the vaccine?	Immunology	07/06/2021	4405	2084	801	1520
What happens if the second dose is late?	Immunology	07/08/2021	564	317	65	182
Can I do the first dose with one vaccine and the second dose with another?	Immunology	07/13/2021	1113	402	116	595

The same infographics posted at PUC Campinas Hospital were posted on Instagram, however, some in immunology were not published. In clinical areas, the same infographics reached 27,157 views. In the surgical areas, 15,281 views were obtained. In social medicine, only one infographic was posted with 294 views. And

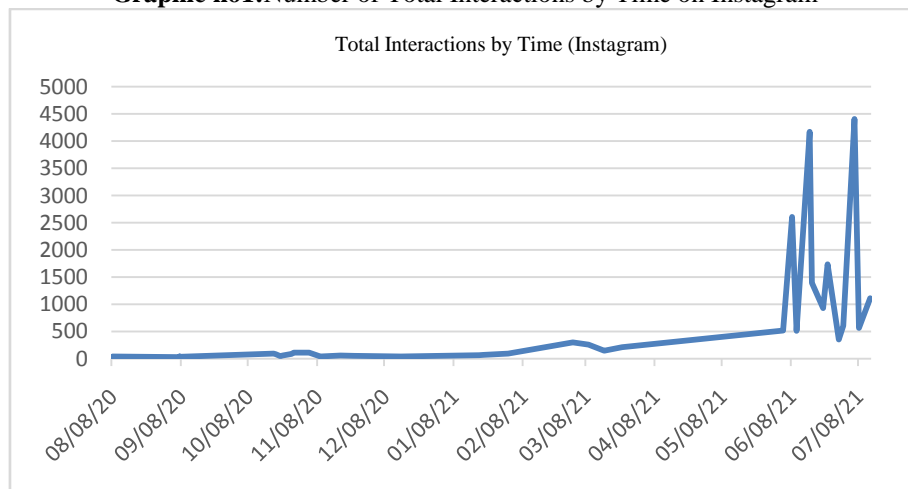
immunology had 371 views across 7 infographics posted. Totalling 43,103 accesses, 43.90% of searches related to coronavirus and 3.10% of all total searches on the PUC Campinas Hospital website.

Table no2: Number of Views on Hospital PUC Campinas website

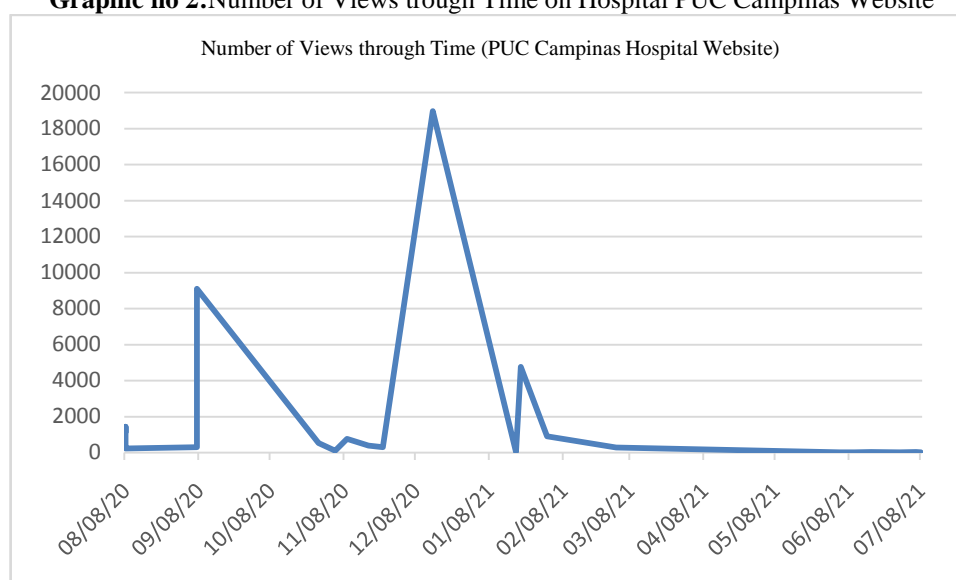
Themes	Areas	Date	Page Views
COVID-19 diagnosis and management	Pneumology	07/09/2020	287
Potential coronavirus effects on the Cardiovascular System	Cardiology	07/09/2020	1,309
Olfactory dysfunction in COVID-19	Otorhinolaryngology	07/09/2020	9,104
Endocrinological conditions of COVID-19	Endocrinology	08/08/2020	1,128
Neurological manifestations of COVID-19	Neurology	08/08/2020	1,424
Elective surgeries during the COVID-19 pandemic	General Surgery	08/08/2020	1,386
Multisystem inflammatory syndrome	Pediatrics	08/08/2020	1.152
Projection of psychiatric illnesses in the pandemic	Psychiatry	08/08/2020	222
COVID clinical management protocol	Intensive Care Medicine	10/28/2020	531
Endocrine and metabolic aspects of COVID-19	Endocrinology	11/04/2020	96
Anticoagulation treatment with decreased mortality	Hematology	11/09/2020	748
Complication of thromboembolism in COVID-19	Emergency Medicine	11/18/2020	383
SUS and COVID-19	Public Health	11/24/2020	294
Replication of SARS-COV-2	Microbiology	12/15/2020	18,973
Orthopedics and COVID-19	Orthopedic	01/19/2021	28
Skin manifestations of COVID-19	Dermatology	01/21/2021	4,763
COVID-19 in pediatrics	Pediatrics	02/01/2021	904
CORONAVAC vaccine	Immunology	03/02/2021	279
Should anyone who has had COVID-19 be vaccinated?	Immunology	06/04/2021	10
After I took the vaccine, do I no longer transmit the virus?	Immunology	06/10/2021	15
Can I be infected with coronavirus after having already had the vaccine?	Immunology	06/17/2021	26
Can I get another vaccine along with the COVID-19 vaccine?	Immunology	06/29/2021	8
What happens if I don't get the second dose of the vaccine?	Immunology	07/06/2021	23
What happens if the second dose is late?	Immunology	07/08/2021	10

There was a big difference in the average number of interactions or views over time, while on the PUC Campinas Hospital website, there was a peak at the end of 2020 and beginning of 2021, in Instagram posts the peak occurred around the second half of 2021, just as the themes that received the most attention was different. On the Hospital's website there were more technical topics, however, on Instagram the topics were more related to the issues that were trending, mainly related to vaccination.

Graphic no1: Number of Total Interactions by Time on Instagram



Graphic no 2:Number of Views trough Time on Hospital PUC Campinas Website



The papers on which the infographics were based had a total of 12,916 citations, which came from a total of 14 papers, resulting in an average of 923 citations per work, with a minimum number of 4 citations and a maximum of 2,755, the median was 288. However, all immunology works were not based on papers, therefore, they were not included in this statistic and two inspiring papers were unable to find citation numbers.

Table no 3: Number of citations of the inspirational papers

Theme	Area	Inspirational Papers Citations
COVID-19 diagnosis and management	Pneumology	1,749
Potential coronavirus effects on the Cardiovascular System	Cardiology	2,225
Olfactory dysfunction in COVID-19	Otolaryngology	386
Endocrinological conditions of COVID-19	Endocrinology	40
Neurological manifestations of COVID-19	Neurology	116
Elective surgeries during the COVID-19 pandemic	General Surgery	4
Multisystem inflammatory syndrome	Pediatrics	2,615
Projection of psychiatric illnesses in the pandemic	Psychiatry	65
Endocrine and metabolic aspects of COVID-19	Endocrinology	190
Anticoagulation treatment with decreased mortality	Hematology	Could not be found
Complication of thromboembolism in COVID-19	Emergency Medicine	140
SUS and COVID-19	Public Health	778
Replication of SARS-COV-2	Microbiology	2,755
Orthopedics and COVID-19	Orthopedics	Could not be found
Skin manifestations of COVID-19	Dermatology	1715
COVID-19 in pediatrics	Pediatrics	138

IV. Discussion

On Instagram, the results obtained were based on infographics publicly available, and, analyzing the data, the result acquired was that the major interaction with the infographic was mainly in subjects with controversial issues in Brazil, as the situation of the vaccine^{5,6,7}. However, other subjects like techniques in clinical and surgical areas seemed to have a low interaction impact. This happened because the Instagram population is not necessarily included in academy. As such, it is known that there is no well construction of infographics that is sufficient to attract attention of readers if it is not published in the right place.

On the PUC Campinas Hospital website, the more technical search obtained more interactions, probably because health professionals access the website. Furthermore, the population that goes to the Internet to seek knowledge tends to look for more technical information, so infographics that contained information more about clinical and surgical areas had a greater impact. However, the immunology topics, even with fewer

publications on the Hospital website, had a smaller impact than expected when compared to the Instagram results. Social medicine in both places had little impact, although, as there was only one publication, it is not possible to reach conclusions. Unlike Instagram, where publications appear in the feed or stories of the users, those on the Hospital website needed to be found.

Infographics represented almost half of the research related to coronavirus on the PUC Campinas Hospital website, which showed that the search for information was just as important as the search for test results caused by this era of health crisis of the world faced due to the pandemic. So, this reinforces that people seek information that are reliable and bias-free⁸.

Time was also an important factor, while the website's data was in greater demand at the beginning of the pandemic, Instagram's search was later. This is due to two main factors: right at the beginning of the discovery of the coronavirus, more technical information began to be produced, which attracted the attention of many people who were concerned about the disease and the vaccine, which caused uncertainty about the possible adverse effects related to its application.

As for the inspiring articles, they maintained a very high citation, which shows that they are and will continue to be indispensable for information, even if it is mostly restricted to academy. In this way, all means of spreading knowledge, as well as the infographic, serve to complement and assist in dissemination, especially to people who do not have access to other sources of information.

Therefore, in times of crisis, accurate information must reach people, to keep them informed and free from untruths, as they can further worsen the situation^{9,10}. In this way, infographics have been gaining notoriety to help disseminate knowledge and tend to be even more prevailing in everyday life.

V. Conclusion

Infographics did not come to replace any source of information, but rather to complement it. However, it was clear that it only achieves an adequate impact if it is published in the correct location. Finally, more studies are needed to gain greater understanding and better precision on the topic.

VI. Acknowledgements

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