

THE SPREAD OF *FAKE NEWS* AND THE IMPACTES ON COVID-19, MEDICATION USE AND VACCINATION

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ABSTRACT

The term fake news (FN) reached space in the media, being cited and identified for the first time in 1925 by McKernon. The aim was to evaluate the impact of NF on the population in terms of health, through a cross-sectional study, with qualitative and quantitative analysis. The data obtained were analyzed using the Statistical Package for Social Sciences (SPSS), using Pearson's Chi-Square Test, with $p \leq 0.05$. There were 1358 participants, 52%-(n=711) women and 64%-(n=870) between 18 and 29 years old. 31.1%-(n=423) of Paraiba-PB. WhatsApp 86.1%-(n=1170) is where more

information is disseminated. 91%-(n=1234) see no problem in taking vaccines, 86%-(n=1167) receive information about vaccines and 94%-(n=1272) believe that the vaccine protects them. The most publicized news about medicines during the pandemic were chloroquine/hydroxychloroquine 83%-(n=1121) and ivermectin 75%-(n=1021). Insertion of health education models is proposed at different levels of education of citizens, so that critical and analytical sense is awakened and the propagation of untruths is discouraged.

KEYWORDS: COVID-19, Ivermectin, Hydroxychloroquine, Pandemic, Vaccination.

A DISSEMINAÇÃO DAS *FAKE NEWS* E OS IMPACTOS SOBRE A COVID-19, USO DE MEDICAMENTOS E VACINAÇÃO

RESUMO

O termo fake news (FN) alcançou espaço nos meios de comunicação, sendo citado e identificado, pela primeira vez, em 1925, por McKernon. Buscou-se avaliar o impacto das FN na população no âmbito da saúde, através de estudo transversal, com análise qualiquantitativa. Os dados obtidos foram analisados pelo Statistical Package for Social Sciences (SPSS), realizado Teste Qui-Quadrado de Pearson, com $p \leq 0,05$. Obteve-se 1358 participantes, 52%-(n=711) mulheres e 64%-(n=870) entre 18 a 29 anos. 31,1%-(n=423) da Paraíba-PB. O Whatsapp 86,1%-(n=1170) é onde mais ocorre disseminação de

informações. 91%-(n=1234) não veem problema em tomar vacinas, 86%-(n=1167) recebem informações sobre vacinas e 94%-(n=1272) acreditam que a vacina os proteja. As notícias mais veiculadas na pandemia sobre medicamentos foram cloroquina/hidroxicloroquina 83%-(n=1121) e ivermectina 75%-(n=1021). Propõe-se inserções de modelos de educação em saúde em diversos níveis de formação dos cidadãos, para que seja despertado o senso crítico e analítico e desincentivada a propagação de inverdades.

PALAVRAS-CHAVE: COVID-19, Ivermectina, hidroxicloroquina, Pandemia, Vacinação.

1 INTRODUCTION

The internet transforms the way of publicizing, the speed, veracity and propagation of news and how they impact the lives of the population. Constituting a contemporary landmark, the term fake news has achieved much space in the media and the world, even cited and identified, for the first time, in 1925, by McKernon (Wang, McKee, Torbica & Stuckler, 2019). Coupled with all the technological advances and the role of social media (SRs) to inform people as well as connect them, a new outbreak emerges - the infodemic, an interesting and quite suggestive denomination to characterize the large number of news that spread in an exponential and overwhelming way, whose truth may be doubtful or false, being named FN, which occupy space in the daily life of social communication, in political, educational and health niches, influencing and transforming them deeply (Sanchez, Paredes & Vallejos, 2020).

In the health scenario, since the end of 2019, the world has been living with the infection caused by the SARS-CoV-2 virus, a new type belonging to the coronavirus family, responsible for the disease COVID-19 (Coronavirus disease, 2019) that became a pandemic on March 11, 2020. A priori, it was believed to affect only the lungs and could lead to Severe Acute Respiratory Syndrome (SARS), but as contagions progress, complications are observed in various systems of the human body (renal, cardiovascular and nervous), including long-term sequelae (Zhang, Shang, Liu, Zhang & Zheng, 2020).

As an attempt to prevent viral proliferation, many news articles have been published about the drugs hydroxychloroquine, chloroquine, ivermectin, and nitazoxanide; antivirals such as remdesivir, lopinavir, and ritonavir. It is important to note that these substances are not indicated to treat or prevent this disease. The research uisas performed do not attribute therapeutic efficacy and safety during use in humans carrying the new coronavirus. Although, at first, some studies, such as the one on remdesivir, showed encouraging indicators, in almost two years of pandemic, it was found that remdesivir does not interfere in the patient's improvement and does not reduce the length of hospital stay (Zhang, Shang, Liu, Zhang & Zheng, 2020; Yazdany & Kim, 2020; Grein et al., 2020; Lim et al., 2020; Ansems et al., 2021).

Untruthful news, in times of COVID-19, leads health professionals, doctors, nurses, pharmacists, among others, to a difficult task, which is to make the population aware with information backed by science, in face of the great spread of misinformation in digital media, which made (and still makes) the crowd harm their health, especially in a period when hospitals were crowded and professionals overloaded, accentuating the risk of contamination by SARS-CoV-2 (O'Connor & Murphy, 2020).

From this, it is possible to see strategies to reduce the impact of FN in the context of collective health, such as the implantation and/or implementation of information centers in primary health care, encouraging the search for the veracity of the news received in the SRs, as well as tools for the receiver of the message to identify false news and break the sharing cycle. Legislation is also in process to frame these conducts as a crime, in order to then issue fines to those responsible for sharing unreal stories. Moreover, it is seen as pertinent to implement in Brazilian education, from early childhood education on, the formation of a critical sense to identify data and fake news.

Thus, the present study aimed to evaluate the impact that the dissemination of FN in the health sphere causes to the population, covering the information conveyed regarding COVID-19, the use of medicines, regarding the influence of fake news on immunization, and the repercussions on vaccination coverage.

2 METHODOLOGY

This was a cross-sectional, descriptive, prospective study with qualitative and quantitative analysis of sociodemographic and economic variables and the receipt of FN about COVID-19, medications, vaccination and the respective conducts/behaviors of the respondents, carried out from October 2020 to September 2021, in Brazilian territory that corresponds to 8.510,295.914 km², with 5568 municipalities and 215,510,541 inhabitants, distributed in 5 regions: North (15,864,454 hab.), Northeast (53,081,950 hab.), Midwest (16,085,885 hab.), South (29,016,114 hab.) and Southeast (87,711,946 hab.) (IBGE, 2019; IBGE, 2022).

The electronic address of the data collection instrument of the Google form type (Google Forms) was made available on Instagram profiles, as well as sent by e-mail and WhatsApp, through dissemination and promotion of the research content in the SRs.

The individuals, by accessing the link, were invited to read the Free and Informed Consent Form, and by accepting it, they were able to answer the questions anonymously, so that the researchers could trace the socioeconomic and demographic profile and, afterwards, analyze the impact of FN in their lives, how they interpret and disseminate it, providing the reasoning about strategies to raise awareness of the adequate use of digital media.

The variables analyzed were gender, age, family income, profession, Brazilian state, receipt of FN about COVID-19, medications, and vaccination, and the respective behaviors of the respondents.

For inclusion in the survey, the respondent needed to: be at least 18 years old; voluntarily accept to participate in the study by agreeing to the TCLE; be cognitively able to answer the survey; have an average of 5 minutes to answer the questionnaire.

Those who, after being informed about the study, refused to participate; who did not understand the research objectives; participants with some cognitive impairment or communication limitations; incomplete and/or not correctly filled out forms were excluded.

The data obtained were recorded in Excel[®] spreadsheets to perform the calculations and obtain the results. Statistical analysis was performed using the Statistical Package for Social Sciences (SPSS) v. 20.0 software for the production of graphs and tables, and the variables cited were calculated to obtain their absolute and relative frequencies, as well as the adjusted residuals, considering ≥ 1.96 . The adjusted residual has a normal distribution with zero mean and standard deviation equal to 1. Thus, if the adjusted residual is greater than 1.96, in absolute value, it can be said that there is evidence of a significant association between the two categories analyzed. It is noteworthy that the adjusted residual serves to identify among the statistically significant associations, which cells in the table represent this significance. The higher the adjusted residual, the greater the association between the categories. In the bivariate analysis, the respective 95% confidence intervals and $p \leq 0.05$ values were considered, through Pearson's Chi-square test, to assess statistical significance.

The study complied with the ethical precepts for research with human beings, having been reviewed and approved by the Ethics Committee for Research with Human Beings (CEP) of the Alcides Carneiro University Hospital (HUAC) with certificate number 4,296,833.

3 RESULTS AND DISCUSSION

The internal consistency of the questionnaire was evaluated by Cronbach's reliability coefficient or data reliability alpha, which was 0.686, showing a considerable level of reliability and

relevance, because, according to Landis and Koch (1977), the closer to 1, the more reliable are the results, showing reliability in the results obtained.

By sharing the survey link, we reached 1446 respondents who, after applying the exclusion and inclusion criteria, constituted a total with 1358 participants distributed mainly among the states of Paraíba 31.1% (n = 423), São Paulo 12.2% (n = 165), Rio Grande do Norte 9.2% (n = 125) and Minas Gerais 5.3% (n = 72) (Figure 1). We obtained a predominance of females 52% (n=711), besides a predominant age range of 18 to 29 years 64% (n=870), followed by 30 to 39 years 19% (n=262), 40 to 49 years 10% (n=130), 50 to 59 years 5.0% (n=66), 60 to 79 years 2.0% (n=29). It was also found that the urban area was predominant, with 94.3% (n=1281), in relation to the rural area.

In a study conducted by Fagundes et al. (2021) showing the perception of young people about FN in science. The results of the qualitative research that occurred in a conversation circle format, showed a certain insecurity of the younger ones regarding the reception of news, as well as to identify what is true, besides which media to trust. Something important is that they believe in checking the information and in verifying the news in a more critical way. In this way, the recurrent answers in the course of this research can bring more encouraging results about the decrease of FN dissemination.

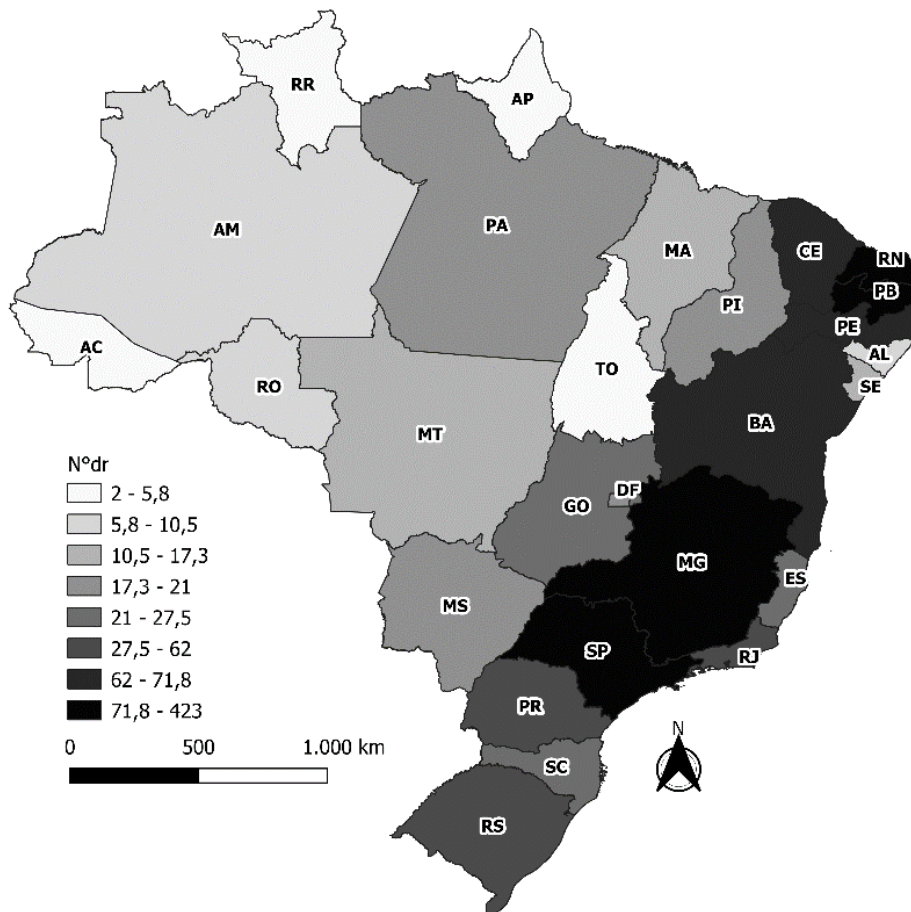


Figure 1: Distribution of survey respondents by Brazil. N°dr - Number of respondents.

Regarding the level of education, 33.8% (n=459) had incomplete higher education; 22.2% (n=302) completed higher education; 15% (n=204) in specialization; 13.5% (n=184) completed high school; 7.9% (n=107) master's degree; 5% (n=68) PhD; 1.6% (n=22) incomplete secondary education; 0.7% (n=10) had completed primary education; 0.1% (n=2) incomplete primary education; in family income, there was a higher quantity in family income of 2 to 5 minimum wages

39% (n=534); with less than 1 minimum wage to 2 minimum wages 33% (n=448); from 5 minimum wages to more than 10 minimum wages 22% (n=304); do not know their income 4% (n=54); no income 1% (n=18).

In terms of level of education, incomplete higher education was the most common, followed by complete higher education. In times of infodemic and with a great load of information received by people, it is of utmost importance to have and/or acquire a critical thinking based on literature with scientific support since disparities in the acquisition of this more judicious look, as a result of a low level of education, added to family income and domicile zone, constitute variables that can interfere in the way people identify, evaluate and share information, whether true or not (Varela & Guimarães, 2006; Mesquita, Oliveira, Seixas & Paes, 2020).

When asked about the medium through which they most receive and send information, WhatsApp was most frequently indicated 86.1% (n=1170) (Figure 2A).

In table 1, one can see associations between SRs and behaviors, with significant results in WhatsApp (p=0.01), Twitter (p<0.001) and Google (p<0.001). It is noteworthy that people who receive information by WhatsApp ask other people about the veracity of the news 15.8% (n=215), and those who receive information by Twitter 24.9% (n=338+) and Google 50.2% (n=682), search on reliable sites to verify the veracity, after that they pass on. These analyses are inferred by the positive adjusted residuals in the statistically significant associations.

Table 1: Association between social networks and conduct when receiving a news item.

Social Networks	Conduct when receiving news								P
	RIAG		POPSV		PSCV		TOTAL		
	N	%	N	%	N	%	N	%	
Instagram									
No	11	0,8	68	5,0	265	19,5	344	25,3	0,349
Yes	32	2,4	166	12,2	816	60,1	1014	74,7	
TOTAL	43	3,2	234	17,2	1081	79,6	1358	100	
Facebook									
No	29	2,1	155	11,4	661	48,7	845	62,2	0,268
Yes	14	1,0	79	5,8	420	30,9	513	37,8	
TOTAL	43	3,2	234	17,2	1081	79,6	1358	100	
Whatsapp									
No	8	0,6	19	1,4	161+	11,9	188	13,8	0,01
Yes	35	2,6	215+	15,8	920	67,7	1170	86,2	
TOTAL	43	3,2	234	17,2	1081	79,6	1358	100	
Twitter									
No	31	2,3	193+	14,2	743	54,7	967	71,2	0<.001
Yes	12	0,9	41	3,0	338+	24,9	391	28,8	
TOTAL	43	3,2	234	17,2	1081	79,6	1358	100	
Google									
No	23	1,7	128+	9,4	399	29,4	550	40,5	<0,001
Yes	20	1,5	106	7,8	682+	50,2	808	59,5	
TOTAL	43	3,2	234	17,2	1081	79,6	1358	100	

P-independence chi-square; +Adjusted residual ≥ 1.96; RIAG-I immediately pass it on to friends and groups; POPSV-I ask other people about the veracity; PSCV-I search reliable websites to verify veracity, after that I pass it on.



Galhardi et al. (2020) corroborate this result, from the development of an app called "I Fiscalize", showed that the most used SRs are the WhatsApp, followed by Instagram. In times of infodemy, the SRs contribute to the transfer of this great load of information, being the WhatsApp represented, worldwide, as the largest social network in use by people, followed by Telegram. Thus, it is relevant to highlight the role of the application in the information and misinformation of society, especially with respect to news concerning health, being necessary from the network administrators prudence and more agile tools for identification of FN, resulting in access and dissemination of truthful information (Moreno, Narciso & Sepúlveda, 2021).

In table 2, it is observed that 85.9% (n=1167) receive news about vaccination. The associations made were all significant with $p < 0.001$, and show that of the people who received news about vaccination, their contents were about: "Advocating the use of vaccination (DUV)" 59.4% (n=806), "Vaccines can kill like disease (VMCD)" 29.9% (n=406), "Vaccines can make you sick as well as the virus (VPDCV)" 29.4% (n=399) and "Vaccines cause severe adverse effects (VEAS)" 41% (n=557), and this analysis was inferred from the positive adjusted residual in the cells of the table representing the significance of the association.

Table 2: Receipt of news about vaccination and the content of these news.

News content	Have you received any news about vaccination						P
	YES		NO		TOTAL		
	N	%	N	%	N	%	
DUV							
No	361	26,6	186+	13,7	547	40,3	<0,001
Yes	806+	59,4	5	0,4	811	59,7	
TOTAL	1167	85,9	191	14,1	1358	100	
VMCD							
No	761	56,1	189+	13,9	950	70,0	<0,001
Yes	406+	29,9	2	0,1	408	30,0	
TOTAL	1167	85,9	191	14,1	1358	100	
VPDCV							
No	768	56,6	190+	14,0	958	70,5	<0,001
Yes	399+	29,4	1	0,1	400	29,5	
TOTAL	1167	85,9	191	14,1	1358	100	
VEAS							
No	610	44,9	188+	13,8	798	58,8	<0,001
Yes	557+	41,0	3	0,2	560	41,2	
TOTAL	1167	85,9	191	14,1	1358	100	

P - Independent Chi-square; + Adjusted residual ≥ 1.96 ; DUV-Defending Vaccination Use; VMCD-Vaccines can kill as well as the disease; VPDCV-Vaccines can make you sick as well as the virus; VEAS-The vaccine causes severe adverse effects.

An informatized society, with information broadcasting that brings to notoriety important aspects for the prevention of diseases, such as vaccines, deserves a different look from the types of news that are broadcasted in the personal media, RSs and the like. It is possible to find out what is true or not, as well as demystify the misunderstanding of some people by the vaccination process, showing them the real need for this practice and its positive points, something practiced since the Law of compulsory vaccination proposed by Oswaldo Cruz, which led to the historical



phenomenon "Revolta da Vacina", differing from current times in terms of intensity and imposition (Gugel et al., 2021).

According to Nuismier et al. (2016), one among the main false news passed on about vaccination was: "the body will receive a load of the virus that causes the disease and that the individual will get sick". However, it is important to clarify that vaccines are weakened viruses or parts of the virus, and that they have a high capacity to eradicate diseases, when there are well-designed calendars such as those existing in the Brazilian National Immunization Program (PNI), as well as individual acceptance before this intervention considered of excellence level of prevention.

When asked if they received any news about vaccination, the majority received 86.0% (n=1167) (Figure 2B). Linked to this, we asked about the sentimental relationship with the vaccination process and obtained a majority of people who do not see a problem in taking vaccines 91% (n=1234) (Figure 2D).

Nevertheless, the vaccination process is seen as something very promising and as a good tool to control pandemics, endemics and epidemics, having effectiveness in and for collective health. It was through the process of mass vaccination of the population that the eradication of several diseases in Brazil was achieved, as was the case with measles and polio. Thus, this data of 91% (n=1234) of respondents do not see a problem in taking vaccines is something assimilated with relief and confidence of the consolidation of control of diseases that affect our society (Peters, Tartari, Lorfinejad, Parneix & Pittet, 2018).

The results were: 59% (n=799) sometimes trust, 37% (n=503) do not trust, and 4% (n=56) trust the information they receive (Figure 2C). In this same theme, survey participants were asked if they received any news about medications or supplements (vitamins) related to COVID-19, and many of the responses pointed to chloroquine/hydroxychloroquine 82.5% (n=1121) and ivermectin 75.2% (n=1021) (Figure 2E). In addition, it was inquired about the use of masks at the time of the COVID-19 pandemic, having the most news that the use of masks with 3 layers ensures better protection against SARS-CoV-2 73.2% (n=994), followed by that cloth masks can be of any types of tissues 21.6% (n=293) (Figure 2F).

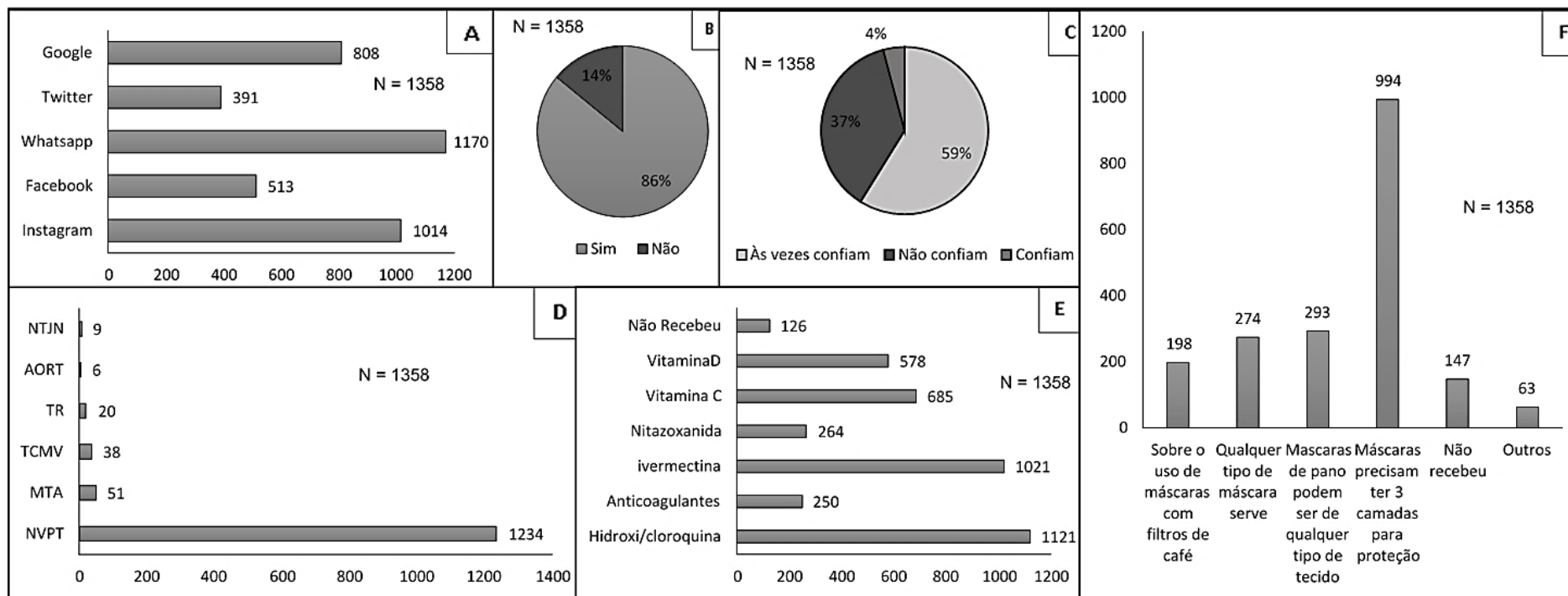


Figure 2: Means by which they receive information and type of information received by respondents. A - Means by which they receive and send information; B - Receiving news about vaccination; C - Trust information received about medications; D - Sentimental relationship as vaccination process; E - News about medications/supplements in COVID-19; F - News about wearing masks in the pandemic in COVID-19; NVPT-No problem taking it; MTA-I am afraid to take it and get sick; TCMV-I take the vaccine, but against my will; TR-They fear the reactions; AORT-Approved by regulatory agencies will take it; NTJN-Not taking it at all.

With regard to medications in times of the COVID-19 pandemic, the present study showed greater dissemination of information on ivermectin and chloroquine/hydroxychloroquine, alerting to self-medication as something worrisome also in pandemic times. In a study conducted by Santos, Santos, Luz (2021), about 73% of respondents in the survey reported self-medicating any of the aforementioned drugs for fear of being contaminated with SARS-CoV-2, showing the immense power of SRs and how FN can impact people's lives.

The irrational use of medication and self-medication represent a problem observed with concern by the World Health Organization (WHO), since, not only in Brazil, but throughout the world, medications are prescribed, sold or dispensed incorrectly, incoherently and, perhaps, unnecessarily, due to the influence of the medicalized and medicamentized culture; of "push therapy", imposed by some pharmacy chains that exercise marketing aimed at profit and networking with the doctor, as well as, not least, of poor quality guidance (Paula, Campos & Souza, 2021).

Thus, self-medication associated with irrational use can be disastrous causing drug-drug interactions, which culminate in inhibition or intensification of the response of some drug, requiring interprofessional intervention, often including the clinical pharmacist, an efficient professional in reducing negative clinical outcomes resulting from unsafe and unnecessary drug associations (Maher, Hanlon & Hajjar, 2013).

Regarding the news about the use of masks in the pandemic, there was a greater amount of responses that contemplated that the "masks need to have 3 layers for protection". However, it is now understood that cloth masks do not provide as much protection as masks of type N95, KN95, and PFF2, all of which provide more than 95% protection against infection by the new coronavirus (Araruna et al., 2021).

The respondents were asked about the level of protection of vaccines in general, and the majority 94% (n=1272) believe that vaccines protect them and 6% (n=86) do not believe in their effectiveness, therefore do not believe that vaccines protect against diseases.

The respondent's diagnosis regarding COVID-19 was questioned: 47.6% (n=646) had no tests (Rapid or RT-PCR); 38.8% (n=527) had a negative result, and 13.6% (n=185) were positive.

Table 3 shows a statistically significant association (p<0.001) between the respondents' level of education and whether or not they believe that chloroquine/hydroxychloroquine treats and/or cures COVID-19. Moreover, analyzing the adjusted residual present in the table, Incomplete High School (EMI) with 0.3% (n=4) believe that yes, it can treat and/or cure COVID-19 and 0.5% (n=7) that it might cure, in Complete High School (CME), 2.3% (n=31) believe that it might cure yes COVID-19. However, with Incomplete High School (ESI) with 27.5% (n=373) and Complete High School with 15.1% (n=205) do not believe hydroxychloroquine/chloroquine treats and/or cures COVID-19.

Table 3: Association between education level and belief that hydroxychloroquine/chloroquine cures COVID-19.

Level of Education	Does hydroxychloroquine/chloroquine treat and/or cure COVID-19?
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	Yes		No		Yes, there is a chance of cure		Maybe it will cure yes		TOTAL	P
	N	%	N	%	N	%	N	%	N	%
EFI	0	0	2	0,1	0	0	0	0	2	0,1
OBE	0	0	7	0,5	2	0,1	1	0,1	10	0,7
EMI	4+	0,3	7	0,5	4	0,3	7+	0,5	22	1,6
EMC	5	0,4	135	9,9	13	1,0	31+	2,3	184	13,5
ESI	8	0,6	373+	27,5	36	2,7	42	3,1	459	33,8
ESC	21	1,5	205+	15,1	39	2,9	37	2,7	302	22,2
Specialization	10	0,7	143	10,5	21	1,5	30	2,2	204	15
Master's Degree	2	0,1	92	6,8	3	0,2	10	0,7	107	7,9
PhD	2	0,1	62	4,6	2	0,1	2	0,1	68	5,0
TOTAL	52	3,8	1026	75,6	120	8,8	160	11,8	1358	100

<0,001

P - Independent chi-square; + Adjusted residual ≥ 1.96; EFI - Incomplete elementary school; EFC - Complete elementary school; EMI - Incomplete high school; EMC - Complete high school; ESI - Incomplete higher education; ESC - Complete higher education.

The people participating in the survey were asked if FNs interfere with health, making it difficult the plan, care, quality, and promote the health system, and 90% (n=1220) responded that they interfere a lot, 6% (n=76) that they interfere reasonably, 4% (n=50) that they interfere a little, and 1% (n=12) believe that they do not interfere at all.

Such relationship made, establishes that people with higher level of education do not believe that the drugs in question cure the disease. The fact in question detected brings the discussion that the more critical sense acquired by the population, the lower the chance of believing in a FN (Zhang, Shang, Liu, Zhang & Zheng, 2020; Demari & Scheuer, 2022). Such statements corroborate the data obtained in the present study, given their ineffectiveness against COVID-19.

Galhardi et al. (2020) denoted that the most widespread FN at the time of the pandemic of COVID-19 were those related to the cure (20%) and the use of home methods to prevent viral infection (65%). In this way, health-related fake news, especially during times of a pandemic, contribute to the discrediting of science and public health institutions, as well as to the weakening of public adherence to necessary disease prevention measures.

The collaborators of the study were asked if they felt something bad in their body, some symptom, what they would do. Most of them answered that they would go to a health center/UBS (Basic health Unit) 64% (n=871), followed by going to the hospital 56% (n=755), they would look



for what to do on the internet 14% (n=191), they would ask for tips from friends on WhatsApp 5% (n=68) and they would follow some information they received on SRs 2% (n=30).

When asked if they trusted the information passed on by health professionals, the following results were obtained: 63.8% (n=866) answered yes; 0.5% (n=7) no; 29.1% (n=395) sometimes trust, and 6.6% (n=90) trust only the doctor.

Another significant impact of the untruthful news is on the credibility in health professionals facing anti-science sentiment, a vaccination narrative distorted from reality, and the action of antivaccine activists. With all this threat to the system, using SRs to try to alleviate this situation by clarifying the false information published and boosted, in an attempt to contain it by making society aware of the importance of science for health, seems to be an interesting strategy (Steffens, Dunn, Wiley & Leask, 2019).

One idea/intervention to combat FN was also requested, with 27% (n=361) responded "No ideas", "Government changes" 2% (n=31), "Creation of Laws" 3% (n=39), "Better functioning of SRs to identify FN" 9% (n=129), "Increased enforcement" 3% (n=38), "Punishment/Fines to FN sharers" 8% (n=104), "Verify veracity in reliable sources before sharing" 22% (n=295), "Creation of Software/Apps/Algorithms to combat FNs" 6% (n=75), "Awareness campaigns/investment in education" 16% (n=215), "Verify information in secure health agencies" 3% (n=36).

All this range of fallacious information resonates in the population in a way that does not generate critical interest in analyzing the real veracity of the facts that are shown in front of them. Using apps, content is easily generated and spread quickly, making it challenging to be a health professional, interested in maintaining the well-being of the patient who sometimes believes what he sees in his digital interaction medium, repercussing negatively, also, on health, both individual and collective, which undermines the full functioning of the health system (Zhang & Ghorbani, 2020).

About the measures to combat FN, most believe that verifying the veracity before sharing is the best way to reduce/contain/eliminate, followed by awareness campaigns for the population. It should be noted that there are governmental measures to try to reduce the dissemination and impact of FN in society, such as the project "Fato ou Fake" (Fact or Fake), which was carried out by the Ministry of Health. Moreover, legislative measures are being discussed in the Federal Senate, such as those presented in the Bill No. 2630/2020, which establishes rules for the use and operation of SRs and private messaging services via the Internet, as well as determination for the re-registration of all prepaid cell phone accounts in the country, with verification of the identity of their holders and typification of crimes against honor (libel, slander and defamation) on the Internet, with greater disciplinary measures (Brazil, 2020). The intention of the law is to provide greater and better supervision of what is true or not on the Internet, with an addition that is the punishment of those who post and/or share slanderous information.

4 CONCLUSION

This research allowed us to understand how the sharing of information occurs through the SRs, being Whatsapp the most used, followed by Instagram and Google. Regarding the vaccination process and its relationship with the FNs, it was found that most of those who receive information about vaccines are in defense of its use and application, as well as most respondents do not see problems in taking vaccines.

When it comes to FN and the irrational use of medicines, the research participants sometimes trust the information received on the subject. About the type of news about medicines, people search more in scientific articles for information about medicines to treat cancer and for the cure of the new coronavirus, perhaps due to the level of education and/or profession exercised, demonstrating, in theory, considerable awareness.

Regarding FN and COVID-19", news about the drugs ivermectin and chloroquine/hydroxychloroquine were the most commonly cited and respondents who received them do not believe they cure/treat COVID-19. However, those who have not received information about the drugs believe that they may cure the disease. Also, for adequate protection, the most frequently mentioned response was that masks need to be made of 3 layers of fabrics; that FNs interfere a lot in collective health; that most would seek a hospital or a health center or UBS for care if they got sick; and that there is trust in the information passed on by health professionals.

Thus, it can be seen that FNs are a great challenge for society, and as preventive measures, the participants in the survey proposed to verify the veracity before sharing messages, to conduct awareness/education campaigns for the population, and to improve the security of SRs.

The results obtained show that FN impact collective health, representing a challenge to be overcome and that, to this end, interventions are proposed that include support to information centers so that strategies are developed for the dissemination of truthful information, for the development of the health education service, from early school/education levels, and encouragement to the institution of legislation with criminal penalties - warnings, fines, and imprisonment.

With the present study, it was possible to perceive that the research includes a sample design covering the entire Brazilian territory, demonstrating the impact that the dissemination of fake news about COVID-19, medications, and preventive methods of viral infection has on public health. A limitation of the study is identified as the sample being composed mainly of participants with education levels ranging from incomplete higher education to doctoral degrees.

The research had limitations, such as the limited dissemination of the survey to other regions of Brazil, with a higher prevalence in the Northeast region, in addition to the data collection instrument being somewhat extensive, causing some exhaustion among respondents. The high level of education, with difficulty breaking the barrier of higher education to lower educational levels. Furthermore, given the current contexts, the research was influenced by the political bias of the respondents and society in general.

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