

ANTI-VACCINE NARRATIVES IN FACEBOOK GROUPS: DENIALISM AND POST TRUTH IN PANDEMIC TIMES

NARRATIVAS ANTIVACINAS EM GRUPOS DE FACEBOOK: NEGACIONISMO E PÓS-VERDADE EM TEMPOS DE PANDEMIA

NARRATIVAS ANTIVACUNA EN GRUPOS DE FACEBOOK: NEGACIONISMO Y POSTVERDAD EN TIEMPOS DE PANDEMIA



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ABSTRACT: This text aims to present and discuss the results of a research on anti-vaccination narratives published in two Facebook groups. These posts were collected through observations of the digital environment and interpreted with methodological resources of content analysis. We sought to analyze the posts using as reference the terms that socially anchor them: virtual world and relationships; misinformation and fake news; post-truth and denialism. It is considered the year 2020, when the covid-19 pandemic began and, at the same time, vaccines were developed and, with them, movements of distrust and refusal of vaccination. The results show these aspects, pointing out different motivations for this refusal, with emphasis on questions regarding the following axes: safety, efficacy and need for vaccines; political and economic issues.

KEYWORDS: Anti-vaccine narrative. Facebook. Post truth. Denialism.

RESUMO: O presente texto tem como objetivo apresentar e discutir os resultados de uma pesquisa sobre narrativas antivacinas postadas em dois grupos do Facebook. Essas postagens foram levantadas por meio de observações do ambiente digital e interpretadas com recursos metodológicos de análise de conteúdo. Buscou-se analisar as publicações a partir dos termos que socialmente as ancoram: mundo e relações virtuais; desinformação e fake news; pós-verdade e negacionismo. É considerado o ano de 2020, momento em que a pandemia da covid-19 teve início e, ao mesmo tempo, houve o desenvolvimento de vacinas e, com elas, movimentos de desconfiança e recusa de vacinação. Os resultados evidenciam esses aspectos, apontando diferentes motivações nas postagens para essa recusa, com destaque para questionamentos em relação aos seguintes eixos: segurança, eficácia e necessidade das vacinas; questões de ordem política e econômica.

PALAVRAS-CHAVE: Narrativa antivacina. Facebook. Pós-verdade. Negacionismo.

RESUMEN: El presente texto tiene como objetivo presentar y discutir los resultados de una investigación sobre narrativas antivacunas publicadas en dos grupos de Facebook. Estos posts fueron recogidos a través de observaciones del entorno digital e interpretados con recursos metodológicos de análisis de contenido. Buscamos analizar las publicaciones a partir de los términos que las anclan socialmente: mundo virtual y relaciones; desinformación y noticias falsas; la posverdad y el negacionismo. Se considera el año 2020, cuando comenzó la pandemia de covid-19 y, al mismo tiempo, se desarrollaron vacunas y, con ellas, movimientos de desconfianza y rechazo a la vacunación. Los resultados muestran estos aspectos, señalando diferentes motivaciones en los mensajes para ese rechazo, con énfasis en cuestiones relativas a los siguientes ejes: seguridad, eficacia y necesidad de vacunas; cuestiones políticas y económicas.

PALABRAS CLAVE: Narrativas antivacuna. Facebook. Postverdad. Negacionismo.

Introduction

There are many ways in which digital technology has permeated everyday life in many countries over the past thirty years. Today we live in a digital society (LUPTON, 2015). Our works and relationships are at least partially developed and supported by social media such as Facebook, Twitter, LinkedIn, Instagram etc. The so-called Information Age, of informational global capitalism (CASTELLS, 1999), which emerged in the last quarter of the 20th century, evidenced changes in the sphere of production, work relations and, with them, changes in the social structure and configurations and the configurations of time and space of contemporary societies until we reach the digital society (LUPTON, 2015). The progressive changes “made by the introduction of devices and platforms, in particular, in the last decade” (LUPTON, 2015, p. 2, our translation), generated a great impact on social life and interactions, which are also mediated by digital technologies, largely developed, on digital social networks. Cybernetic space, assesses Le Breton (2007, p. 145, our translation), represents “a world in which time, freed from duration, becomes a space of pure information that no longer requires human corporeality” and requires ever-increasing capacity and time for evaluation from each one in relation to what is posted.

Information and misinformation are enhanced in this cyber world. Giordani *et al.* (2021) evaluate this aspect when discussing the spread of misinformation during the covid-19 pandemic in societies marked by interactions and network connections. According to the authors, the misinformation related to the pandemic has been called an infodemic (GIORDANI *et al.*, 2021) and is related to the large-scale and rapid dissemination of information with untrue content about covid-19.

This information guides actions in relation to covid-19, as well as supporting interpretations of the pandemic context. We start from the theoretical assumption that everything related to the human is socially and historically constructed (LAROCCA; CARRARO, 2000; LE BRETON, 2007). Covid-19 shows more clearly the social nature of the health-disease process (ADAM; HERTZLICH, 2001, p. 70, our translation), which includes discourses and interpretations of given physiological states “according to the social contexts in which they occur”.

It is also important to highlight that in the case of communicable diseases, such as covid-19, we are facing threats that affect not only the infected individual, but also the general population. Getting vaccinated, especially in pandemic situations, is a matter of Public Health,

of attention to the collective, and it is also necessary to consider, as highlighted by Berlinguer (2004), the potential and possibilities of people living in similar circumstances.

With regard to combating communicable diseases, throughout history, great efforts have been made by government agencies to adhere to vaccination campaigns, while anti-vaccination movements also appear.

This text departs from the context of the covid-19 pandemic, seeking to present and discuss research results that focused on anti-vaccine posts raised through observations of the digital environment (Facebook), interpreted with methodological resources of content analysis. We sought to analyze and understand how the anti-vaccine narratives that occur in the posts are constructed in this virtual environment.

Denialism, post-truth and fake news

Since its emergence, the covid-19 pandemic “understandably created alarm around the world, as well as the usual reactions of denying the problem” (CAMARGO; COELI, 2020, p. 1, our translation). Caponi (2020, p. 210, our translation) also addresses this aspect, highlighting the fact that the scientific denialism already adopted in Jair Bolsonaro's election campaign, through his denialism and “contempt for universities, for scientific research, for the rights of vulnerable populations, for indigenous communities, LGBT, street populations, women in situations of violence, etc., it gets worse in times of a pandemic”.

Silva (2021) also discusses the practice of denial of the virus by the federal government, since its inception, highlighting it as a criminal action that hindered states and municipalities that were trying to implement measures to protect against and contain the virus.

The spread of denialist narratives by the federal government and the misinformation that accompanied them could be seen in the reproduction of posts on internet networks, such as Facebook, Instagram, Whatsapp groups, etc. Disinformation in health took place, therefore, in a context of digital integration. There were many fake news involving issues related to covid-19.

In the age of social media, fake news spreads very quickly. This is even more serious when it comes to information that can cause serious damage to the lives of individuals. As highlighted by Giordani *et al.* (2021, p. 2862, our translation), “currently, society affected by the pandemic and its ruptures, is faced with real risks and damage to human life caused by misinformation and deceit”. The so-called fake news involve variations in its concept, with no

consensus regarding its definition, highlight the authors, who point out that “the lack of authenticity and the assumed purpose of deceiving are characteristic features of fake news” (GIORDANI *et al.*, 2001, p. 2862, our translation).

A report presented by the Research Group on Media Discourse and Analysis of Social Networks (RECUERO, 2021), shows that the misinformation present in social media was one of the major and complex problems in the context of the covid-19 pandemic. According to the analysis presented, some elements call for attention: disinformation appears as a partisan political issue and less as a public health issue, being, therefore, debated, most of the time, as a political matter, which leads to the issue, also partisan, supported in denialism.

As highlighted in the report, extreme right groups filter “that content that does not ideologically corroborate with what circulates in the group” (RECUERO, 2021, p. 5, our translation). This group ends up circulating misinformation. Another aspect highlighted in the report refers to the presence of violent and xenophobic content in relation to Chinese and Asians, blamed for transmitting the virus. As pointed out in the analysis of the report, “these frameworks are often used to reinforce pandemic conspiracy theories” (RECUERO, 2021, p. 5, our translation).

Giordani *et al.* (2021) when discussing misinformation in digital media in the covid-19 pandemic, highlight the issue of the destabilization of central sectors of society. As the authors develop, contemporaneously, the communicational dynamics expanded at the same time and to the extent that the “status of the voices authorized to have a say” was destabilized, evaluate Giordani *et al.* (2021, p. 2866, our translation), citing the traditional press and science as discursive apparatuses that are destabilized in times of “post-truth”. The authors rely on Keyes (2004), who argues that in post-truth times “the boundaries between truth and lies, fiction and non-fiction are sublimated”, with a rupture with the binarism between right and wrong, which is replaced by more fluid assessments. As highlighted by Giordani *et al.* (2021), these considerations about post-truth, about the fabrication of “parallel realities” can also be thought of in the context of the pandemic in which realities are produced and disseminated and are legitimized within bubbles of opinion that delegitimize and deny science and, with it, the vaccine.

It is important to note that distrust in relation to vaccines against covid-19, since the beginning of their production by different laboratories, and the denial even of vaccination by

the population amid denialist speeches⁴ by the president of the republic, Jair Messias Bolsonaro, may have reverberated in the consequent decrease in demand for vaccines available at health posts in the country. Unicef data from 2022 show that 3 out of ten children in Brazil did not receive vaccines that can save their lives. The World Health Organization (WHO) and the United Nations Children's Fund (UNICEF, 2022) draw attention to the drastic drop in vaccination rates in recent years. As they point out, “there was a record drop in the childhood vaccination rate” (UNICEF, 2022), the biggest drop in the last 30 years, according to a report presented in July 2022.

Regarding Brazil, the alarming drop in child vaccinations led scientists from the Oswaldo Cruz Institute (IOC/Fiocruz) to make a video for the population, highlighting the importance of keeping up to date with the vaccination schedule. According to data from the Ministry of Health, presented by these researchers, vaccination coverage has been suffering a drastic drop, reaching less than 59% of the target public in 2021. In 2019, the rate of vaccinated people was 73%. It is noteworthy that the Ministry of Health recommends a level of 95% vaccination coverage.

Regarding covid-19, the drop in vaccination coverage is also seen among young people and the adult population. In September 2022, only 31% of the population of Rio de Janeiro aged 18 or over had taken the fourth dose.

It is also important to highlight regional inequality as a major challenge for the country in terms of vaccination coverage, lacking coordinated and centralized actions by the authorities since the beginning of the covid-19 pandemic, as highlighted in a note on the Fiocruz portal (FIOCRUZ, 2022).

The lack of these actions was also driven by denialism, leading part of the population to doubt vaccines.

⁴ As Foucault (1996) develops, discourses are formed by things that are at the same time enunciated and forbidden, said and unsaid, the result of non-continuous elements that result in different effects according to who pronounces it, the context and the position of power of the speaker.

Denial of the vaccine, refusal to be vaccinated: a brief return to history

In 2019, a year before the start of the covid-19 pandemic, the World Health Organization (WHO) released a report highlighting vaccination hesitation as one of the 10 threats to global health that year. The phenomenon is described as reluctance or refusal to vaccinate, even when vaccines are available. It is worth mentioning that vaccination is recognized by scientists as one of the most cost-effective ways to avoid diseases, preserving 2 to 3 million lives per year (OPAS, 2019).

At that time, WHO emphasized a 30% global increase in the number of measles cases. In the years that followed, with the advent of the covid-19 pandemic, the issue of hesitation regarding vaccination gained even more prominence. With the race to develop, produce and distribute vaccines against the new coronavirus, rumors about the safety and effectiveness of vaccines have gained strength. The growing level of skepticism about vaccines may not only compromise the effectiveness of vaccines against covid-19, but also that of vaccines in general. And even reduce trust in institutions such as science and the State (SMITH; CUBBON; WARDLE, 2020). As highlighted by Giordani *et al.* (2021), there is in this process of mistrust a delegitimization of science and the traditional press by the production of parallel truths or post-truths.

More than distrust or individual refusal to be vaccinated, protests against vaccination have been present over time, having emerged along with modern vaccinology in the 18th century. Early protests included emotional pleas from parents against mandatory vaccinations for their children, denunciations of germ theory; accusations against health professionals and use of alternative studies that attested that vaccines were not effective. Arguments against vaccination thus include concern for safety, defense of individual rights, distrust of science, defense of natural healing, promotion of health reform, disbelief in theories of contagion, and monetary motivation behind immunization programs (KATA, 2010).

In Brazil, protests against the vaccine have arisen since the 20th century. In 1904, Rio de Janeiro, then the country's capital, was the scene of the Vaccine Revolt. That year, the government published a plan to regulate the mandatory application of the smallpox vaccine. The argument was that vaccination was essential for public health, considering the numerous outbreaks of smallpox. However, according to Sevckenko (2018), opponents of vaccination claimed that immunizers and health professionals were unreliable. This context generated political articulation and mobilization on the part of the population, which refused the compulsory nature of vaccination.

Officially suspended due to the Vaccine Revolt (1904), vaccination was resumed by the population itself, who began to spontaneously seek vaccination posts due to fear of the disease. “It was the principle of public acceptability of the vaccine product [...] During the 1920s, vaccines against diphtheria, tetanus and pertussis and BCG were gradually introduced in the country and, at the end of the 1930s, the vaccine against yellow fever” (BUSS; TEMPORÃO; CARVALHEIRO, 2005, p. 1853, our translation).

On 18 September 1973, under the Médice Government, the National Immunization Program (PNI) was created, and institutionalized through Law 6,259, of 30 October 1975. This Program had as its main objectives to coordinate, guarantee the continuity and expand the scope of vaccination actions, which advanced by consolidating the national immunization strategy and guaranteeing the eradication of diseases such as poliomyelitis. The results achieved by Brazil, a diverse country of continental dimensions and with great social inequalities, were unprecedented in the world. This made the program become an international benchmark.

The great leap of this Program occurred in 1980, with the implementation of the National Vaccination Days, as part of a strategy that led to the eradication of poliomyelitis in Brazil – the last case was registered in 1989 and the elimination certificate was granted by the Organization Pan American Health Organization (PAHO) in 1994.

According to the Brazilian Society of Immunizations (SBIM, 2021), the improvement of the structure of the PNI together with an effective communication plan, marked by the creation of the character Zé Gotinha (1986) and the support of personalities who were part of children's television programs, as in the case of presenter Xuxa Meneghel, boosted vaccination coverage and made immunizations part of Brazilian daily life.

The success in a country of continental dimensions, populous and with regions of difficult access made the PNI an international reference. There was interest in organizing vaccination campaigns from East Timor, Palestine, the West Bank and the Gaza Strip. Trainings were carried out, technical cooperation agreements were signed and vaccines were donated to these nations. Brazil is in a vanguard position, considering the investment, the quality of research centers, professionals and industrial plants for vaccine production, with the capacity to mass produce high-tech immunobiologicals (SBIM, 2021).

However, from 2016 onwards, there has been a decline in vaccination coverage in Brazil and in several countries due to the reduction in the achievement of the recommended targets for Vaccine Coverage Rates. SBIM states that currently the biggest challenge for the PNI is to fight covid-19. Brazil manufactures two vaccines – Oxford/AstraZeneca/Fiocruz and

Coronavac (Sinovac/Butantan) – and the PNI commands the vaccination process ‘in the best possible way given the scarcity of inputs and the politicization around the subject’ (SBIM, 2021, n.p.).

Regarding anti-vaccination movements, it is important to highlight their complexity. As Larson (2020) highlights, they stem from different motivations, individual and collective, and are related to different contextual factors. Larson (2020, p. 24, our translation) seeks to summarize the issue as follows:

Debates around vaccines have become intertwined with geopolitical issues, as well as political, religious and cultural campaigns, celebrity causes and the age-old devotion to Mother Nature versus technology. While some people are merely hesitant and still continue to get vaccinated, others are more extreme in their 'anti-sentiments', blending their anti-vaccine sentiments with other environmental sentiments (anti-chemistry and anti-mercury), even anti-government control, anti-abortion and even anti-migration - gaining quite a lot of allies beyond vaccine circles.

The author concludes that acceptance of the vaccine is linked to the establishment of bonds of trust between the population and scientists, in relation to the industries that produce them, the health professionals that apply them, and the institutions that manage them. These bonds are a very important acceptance lever for the development of trust. Without these layers, even the most scientifically proven and well communicated information can generate distrust in the population.

However, in a context of denialism encouraged by the federal government itself, the bonds of trust between the population and science weaken, making them compete with other discourses and other constructions of truth. With regard to the pandemic, highlights Caponi (2020), denialism referred to interventions without scientific evidence such as the defense of 'vertical isolation', a position contrary to the guidelines of the World Health Organization (WHO), as well as the defense of therapy without proven efficacy, chloroquine, which had serious side effects in individuals who used it, causing the proliferation, especially in digital media, of various anti-vaccine contents and narratives.

Anti-vaccine narratives

The notion of narrative used here is based on the idea of framing addressed by Massarani *et al.* (2021) in the discussion on “vaccination in times of fake news”. As the authors develop, this concept of *framing* refers to the notion “of a frame as the central idea that summarizes the argumentative line adopted in a given text” (MASSARANI *et al.*, 2021, p. 10, our translation) and the production of meaning on the subject in question, the refusal of vaccination.

National (LEVI, 2013; ZORZETTO, 2018) and international (KATA, 2010; POLAND; JACOBSON, 2001) studies have dedicated themselves to studying the reasons why people refuse and even condemn the practice of vaccination and the narratives related to each one of them.

According to Poland and Jacobson (2001), the origin of many of the concerns of the anti-vaccination movement include the idea that immunobiologicals are 'foreign' materials injected into the body of healthy people. At the same time, it is believed to be a vague risk of increased incidence of cancer or autoimmune diseases from the administration of vaccines.

Kata (2010) also points out arguments around the themes of safety and efficacy, alternative medicine practices, civil rights and liberties, conspiracy theories, morality and misinformation. Streamlining the analysis, the author groups these arguments into three main pillars: “belief in alternative models of health, promotion of parental autonomy and responsibility, and (dis)trust in relation to vaccines” (KATA, 2010, p. 1714, our translation).

Brazilian studies have also dedicated themselves to analyzing narratives against vaccination. In content published in the magazine *Pesquisa*, by the São Paulo State Research Foundation (FAPESP), Zorzetto (2018) mentions nine reasons to justify the drop in vaccination in Brazil: parents' perception that it is not necessary to vaccinate because the diseases are no more; lack of knowledge of which immunizers are part of the national mandatory vaccination schedule; fear that vaccines will cause harmful reactions in the body; fear of overloading the immune system due to the high number of immunizers; and lack of time to go to health centers, which are generally open from 8 am to 5 pm, only on weekdays.

In addition to the reasons mentioned above, which were originally pointed out by the Brazilian Ministry of Health, the circulation of fake news related to the vaccine was also pointed out; change in the Ministry of Health's vaccination registration system (with problems such as data transmission failure and lack of equipment, which could impact statistics); more complex vaccination schedule that depends on the guidance of doctors (if the doctor does not advise, families probably do not follow the schedule) and (lack of) link with public health service

(vaccination coverage is higher among users of the public health network and one of the reasons mentioned is the bond created between the families and the local health unit).

It is important to highlight that among the reasons listed by Zorzetto (2018) there is a transit between reasons for not getting vaccinated and an anti-vaccination narrative. These are different issues: while the first may occur due to lack of accessibility (such as the issue of vaccination center hours), the second is related to attitudes against vaccines, and these are the ones that are of interest in this text, with special attention to the context of denialism and post-truth in which the posts in two Facebook groups that will be discussed here are located.

Regarding more specifically to covid-19, Smith, Cubbon and Wardle (2020), in a survey of posts on Twitter, Instagram, Facebook pages and public groups, which included the words vaccine or vaccination in English, Spanish and French, between June and September 2020, highlighted 1,200 posts with greater engagement for analysis. The results of this work show that two new key narratives have gained strength with the race to develop a vaccine against covid-19. The first calls into question the process of developing, offering and accessing vaccines, highlighting the challenges of developing a vaccine in such a short period of time, concerns about testing and how it will be distributed. The other narrative has to do with political and economic motivations in general, highlighting the relationship between key government figures, institutions and corporations and their relationships with vaccines and their development. Organizing the narratives in order of the greatest volume of occurrence in the posts, those involving political and economic motivation stand out, followed by questions regarding safety, efficacy and the need for vaccination. A little further back, issues related to the development, provision and access to vaccines appear. And in the last block, with less mentions, are conspiracy theories, posts relating mandatory vaccines and violation of freedom and civil rights and, finally, motivations related to morality and religion.

It is considered in this present text to analyze the anti-vaccination narratives present in two Brazilian Facebook groups, inspired by the categories created by Smith, Cubbon and Wardle (2020), articulated to the context of denialism and post-truth in which they develop.

The research carried out in two Facebook groups: the steps used to locate and analyze the posts

Facebook has been proving to be an important vector for disseminating misinformation and anti-vaccination content. Studies show that fake news generates more engagement than content published on pages of major newspapers on Facebook and that the platform is among the platforms that most frequently disseminate false information (DELMAZO; VALENTE, 2018; ZANATTA *et al.*, 2021), which is the reason choice of this social network for data collection.

The collection was carried out in two Facebook groups identified as anti-vaccination: “*O lado obscuro das vacinas*” (The dark side of vaccines) and “*VACINAS: O maior CRIME da história!*” (VACCINES: The biggest CRIME in history!). Inclusion criteria were the number of followers and being active during the year 2020.

This observational study used content analysis methodological resources (BARDIN, 2016) to interpret the narratives posted in the two analyzed Facebook groups.

To reach these two selected groups, a search was made for public groups with the keyword vaccine in the name or description, using Facebook's own search tool. 21 groups with this characteristic were identified. Then, an evaluation of the description was carried out to identify which ones had a position against vaccination. The last step was to evaluate the number of members and posting frequency. Only these two groups had more than a thousand members and posts made in the last month, then being chosen for analysis: 'Vaccines: The dark side of vaccines', with 13,700 members and 'VACCINES: The biggest CRIME in history!', with 7,970.

At the time of collection, in 2020, no tool was found that allowed the search for keywords in specific groups. The tools allowed searching only in groups in general, which would generate a polluted database. For this reason, data were collected manually, via a search tool present on Facebook itself. A sample of 100 posts was analyzed, 50 from each selected group. The number of 50 posts per year is a limitation imposed by Facebook itself, which only shows about 50 results when the search tool is used in groups.

The choice of the year 2020 was due to the beginning of the pandemic by SARS-CoV-2. During this period, there was an increase in the discussion about vaccines in the media. This was also reflected in the discussions of anti-vaccination groups on Facebook.

The strategy used for data collection consisted of the following steps: 1) Enter the group and click on the search magnifying glass, located on the menu bar; 2) When clicking on the search tool, the keyword ‘vacina’ (vaccine) was typed followed by the enter key. This resource

was used because some posts published in the groups were about other subjects. Using this filter, it was possible to define the sample to be analyzed more assertively, ensuring that the posts made some kind of mention of vaccines; 3) On the left side of the page, a filter was selected with the year referring to the data to be collected, in the 'date of publication' field. In the case of this study, the year analyzed was 2020.

For data collection and recording (text, images and videos), it was necessary to open the post, copy the link to the post and paste it into the Google spreadsheet where the collected data was stored. Then, the following information was included in the spreadsheet: collection date, post text, publication date, post engagement numbers (comments, reactions and shares), type of media used in the post (image, video, link), text in the comments, name of the author of the publication, link to the author's profile and specific reference to some type of vaccine. In addition, the spreadsheet had two other columns that were used later in the content analysis of the posts: key narrative and observation. For this content analysis (BARDIN, 2016), the following phases were covered: pre-analysis; material exploration and treatment of results; interference and interpretation.

The first phase has three “missions”: the choice of documents to be submitted for analysis, the formulation of hypotheses and the elaboration of indicators that support the final interpretation. This was done during the first exploration of Facebook groups, through floating reading, as called by Bardin (2016), who highlights that this process aims to enable the researcher to “know the text by allowing himself to be invaded by impressions and orientations” (BARDIN, 2016, p. 126, our translation).

Only publications containing the keywords '*vacina*' (vaccine) or '*vacinação*' (vaccination) were considered, without exception, in compliance with the exhaustiveness rule (BARDIN, 2016). The sample was determined by Facebook's own search tool, following the representativeness rule. Posts found within anti-vaccine groups on Facebook were chosen, following the rule of pertinence. According to this rule, the retained documents must be suitable as a source of information, in order to correspond to the objective that raises the analysis. All these rules are part of content analysis (BARDIN, 2016).

After this step, the indexes were referenced, which served as the basis for phase two, material exploration. The indexes used in this study followed the typology elaborated by Smith, Cubbon and Wardle (2020, p. 9, our translation) that considers the following anti-vaccine key narratives: 1) development, provision and access: posts related to continuous progress and challenges of vaccine development. This also includes posts related to the testing (clinical trials)

and supply of vaccines, as well as public access to them; 2) Safety, Efficacy, and Necessity: Posts related to the safety and efficacy of vaccines, including those that consider how vaccines may not be safe and effective. The content related to the perception of the need for vaccines also fits into this topic; 3) Political and economic motives: posts related to the political and economic motivations of social actors (key figures, governments, institutions, corporations etc.) involved with vaccines and their development; 4) Conspiracy theory: posts containing unpublished or already established conspiracy theories involving vaccines; 5) Freedom and Independence: Posts related to issues about how vaccines can affect civil and personal liberties; 6) Morality and religion: posts containing moral and religious issues around vaccines, such as their composition and the way they are tested.

Collection result

In the set of 100 posts analyzed, it was possible to identify a key narrative that stands out from the others: the narrative associated with the 'safety, effectiveness and necessity' of vaccines that is present in half of the analyzed contents. A group of four key narratives follows. They are: 'development, provision and access'; 'political and economic reasons'; 'conspiracy theory' and 'freedom and independence'. The key narrative that appeared more punctually was related to 'morality and religion', as can be seen in Table 1.

Table 1 – Key narratives present in the anti-vaccine Facebook groups analyzed in this work

Key narratives	Total
TOTAL	100
Development, provision and access	10
Freedom and independence	10
Morality and religion	1
Political and economic reasons	12
Safety, effectiveness and necessity	50
Conspiracy theory	10
None	7

Source: Devised by the authors based on the spreadsheet for recording the data collected (2022)

It is important to note that, despite the emphasis on the vaccine against covid-19, which appeared as the most cited vaccine, with 38 mentions, the vaccine against the SARS-CoV-2 coronavirus was not the only one mentioned. Other vaccines were also mentioned, such as

influenza, MMR, rotavirus and polio, and this will appear in the examples linked to each of the narratives.

In the group of contents classified as containing the key narrative 'safety, efficacy and necessity', most of the posts referred to cases of adverse effects resulting (or supposedly resulting) from vaccines. In these posts, users made reference to mild reactions, serious sequelae and even cases of death after the administration of immunizers, putting the safety and efficacy of vaccines in check.

In the following posts, it is possible to observe a case of death that, according to the narrative of the post, is linked to the influenza vaccine. Another post claims that all vaccines cause neurological damage, emphasizing cases of autism.

Image 1 – Post that uses the key narrative ‘safety, effectiveness and necessity’*



* This gentleman was firm and strong, carrying his little grandson, until he was **POISONED WITH THE FLU VACCINE**. Two weeks later he had a stroke and **died**.

Source: Facebook group ‘VACINAS: o maior CRIME da história!’, *post* 224 (2020)

Image 2 – Post that uses the key narrative ‘safety, effectiveness and necessity’*



*Each and every vaccine causes NEUROLOGICAL DAMAGE, to a greater or lesser degree. In addition to autoimmune diseases, death in many cases, and countless other consequences. Children and adults with neurological damage are known as AUTISTS, and they are already so numerous that entire neighborhoods and cities are being reserved for them. Figures from 2018 show that the proportion of autistic children in the state of New Jersey, where most vaccinations are carried out in the US, was already 1 in 22. In 1930, before the popularization of vaccines, this rate was 1 in 15,000

Source: Facebook group ‘VACINAS: o maior CRIME da história!’, *post* 217 (2020)

The group of posts with narratives related to 'political and economic reasons' was the second most recurrent. According to the definition given by Smith, Cubbon and Wardle (2020), this group contains posts related to key figures in politics, governments, institutions, corporations and entrepreneurs involved with vaccines and their development. In the following posts, it is possible to observe the questioning of measures taken in the management of two Ministers of Health, Luiz Henrique Mandetta (January 2019 to April 2020) and Eduardo Pazuello (May 2020 to March 2021). Questions are related to the production and purchase of vaccines and the possible economic interests therein.

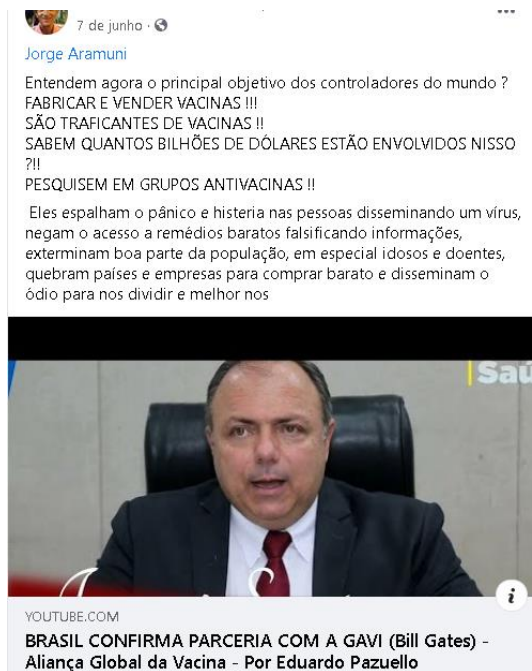
Image 3 – Post using the key narrative ‘political and economic motives’*



* VACCINE seems to be all that's on the mind of this "minister" of health! That he is a DOCTOR, that is, a representative of the interests of the pharmaceutical medical system. Vaccine is his idolized goddess, the ultimate divinity, the solution for everyone and everything. They should change the name of this ministry to the Ministry of Vaccine, because it has nothing to do with health. More in line with the current "minister"

Source: Facebook group ‘VACINAS: o maior CRIME da história!’, post 225 (2020)

Image 4 – Post using the key narrative ‘political and economic motives’*



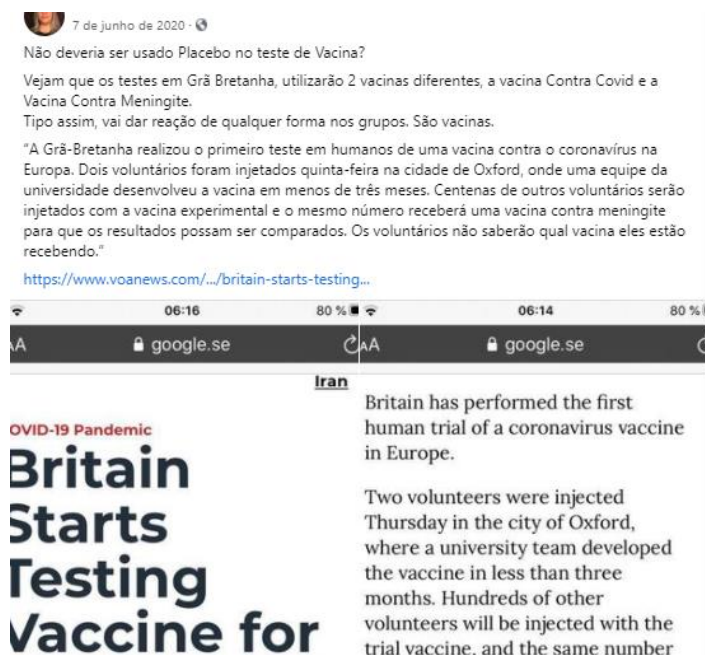
* Do you now understand the main objectives of the world's controllers?
MANUFACTURE AND SELL VACCINES!!!
THEY ARE VACCINE DEALERS!!!
DO YOU KNOW HOW MANY BILLIONS OF DOLLARS ARE INVOLVED IN THIS?
SEARCH IN ANTI-VACCINE GROUPS!!

They spread panic and hysteria in people by spreading a virus, deny access to cheap medicine by falsifying information, exterminate a large part of the population, especially the elderly and sick, break countries and companies to buy cheap and spread hate to divide us better

Source: Facebook group 'VACINAS: o maior CRIME da história!', *post 223* (2020)

In the key narrative on 'development, provision and access' it was possible to find posts mainly related to the challenges of vaccine development. In the following examples, there are posts related to questions about the methodology adopted and the deadline for vaccine development.

Image 5 – Post that uses the key narrative 'development, provision and access'*



* Shouldn't Placebo be used in the Vaccine test?

Note that the tests in Great Britain will use 2 different vaccines, the vaccine against Covid and the vaccine against meningitis.

Like this, it will give reaction anyway in the groups. They are vaccines.

"Britain has performed Europe's first human trial of a coronavirus vaccine. Two volunteers were injected Thursday in the city of Oxford, where a university team developed the vaccine in less than three months. Hundreds of other volunteers will be injected with the experimental vaccine and the same number will receive a meningitis vaccine so that results can be compared. The volunteers will not know which vaccine they are receiving."

Source: Facebook group 'Vacinas: O lado obscuro das vacinas', *post 53* (2020)

Image 6 – Post that uses the key narrative 'development, provision and access'*



* Time to develop of each vaccine.

Repeat with me!

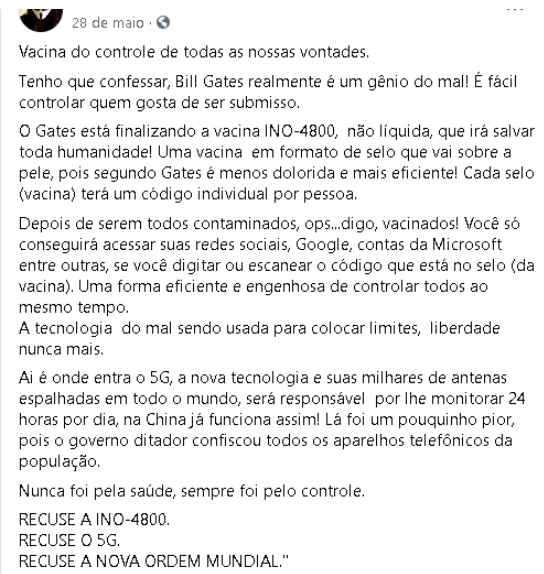
So much time spent developing vaccines, and to this day they have never managed to create vaccines without reactions, especially severe reactions!

This is science!

Source: Facebook group Vacinas: 'O lado obscuro das vacinas', post 68 (2020).

Posts with the key narrative 'conspiracy theories' were also identified. These are contents with intricate stories that users share in the groups in an attempt to justify the option for not vaccinating and to convince other group participants that vaccines are a plot against the population. The first example of the post highlights that the vaccine in the form of an adhesive stamp applied to the skin is a strategy by American billionaire Bill Gates to control people around the world via antennas of 5G internet technology.

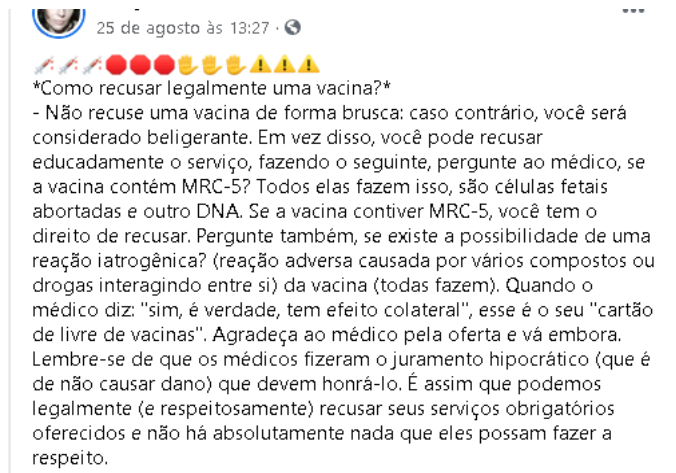
Image 7 – Post using the key narrative ‘conspiracy theories’*



Vaccine of control of all our wills.
I have to confess, Bill Gates is really an evil genius! It's easy to control who likes to be submissive. Gates is finalizing the non-liquid INO-4800 vaccine that will save all of humanity! A stamp-shaped vaccine that goes on the skin, because according to Gates it is less painful and more efficient! Each stamp (vaccine) will have an individual code per person.
After being all contaminated, ops... I mean, vaccinated! You will only be able to access your social networks, Google, Microsoft accounts among others, if you type or scan the code that is on the stamp (of the vaccine). An efficient and ingenious way to control everyone at the same time.
Evil technology being used to place limits, freedom no more.
That's where 5G comes in, the new technology and its thousands of antennas spread all over the world, it will be responsible for monitoring you 24 hours a day, in China it already works like this! It was a little worse there, as the dictatorial government confiscated all telephones from the population.
It was never for health, it was always for control.
REFUSE INO-4800
REFUSE 5G
REFUSE THE NEW WORLD ORDER
Source: Facebook group ‘VACINAS: o maior CRIME da história!’, *post* 235 (2020)

Related to the ‘freedom and independence’ narrative are posts that highlight that vaccines can affect civil liberties. The most recurrent arguments have to do with mandatory vaccination, the State's authority to impose this determination, how to circumvent this rule and the defense that vaccines are optional. Here is an example of how this narrative manifests itself:

Image 8 – Post that uses the key narrative ‘freedom and independence’*



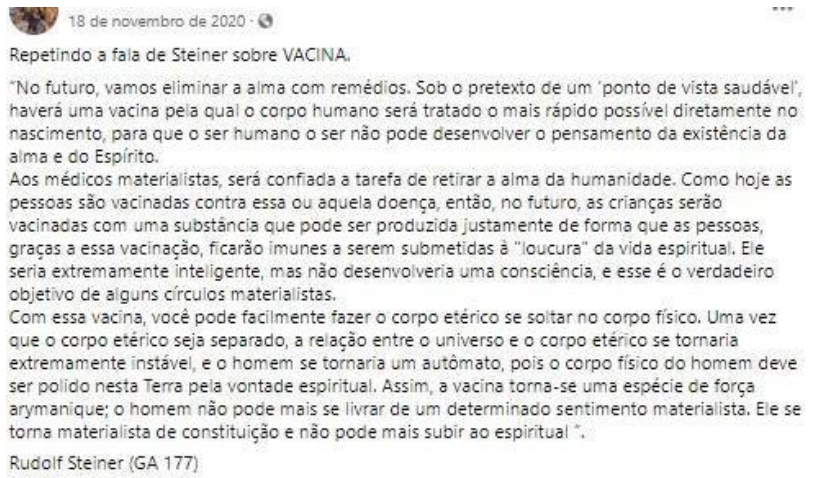
How to legally refuse a vaccine?

- Do not refuse a vaccine abruptly: otherwise you will be considered belligerent. Instead, you can politely decline the service by doing the following, ask the doctor if the vaccine contains MRC-5. They all do that, they're aborted fetal cells and other DNA. If the vaccine contains MRC-5, you have the right to refuse. Also ask if there is a possibility of an iatrogenic reaction (adverse reaction caused by several compounds or drugs interacting with each other) of the vaccine (they all do). When the doctor says: "yes, it's true, it has side effects", that's your "vaccination free card". Thank the doctor for the offer and leave. Remember that doctors took the Hippocratic Oath (which is to do no harm) that they must honor. This is how we can legally (and respectfully) refuse their offered mandatory services and there is absolutely nothing they can do about it.

Source: Facebook group 'VACINAS: o maior CRIME da história!', *post* 245 (2020)

Finally, in the analyzed sample, a significant amount of content on 'morality and religion' was not found. Some posts questioned the composition of the vaccines, arguing that they are made up of aborted fetus cells, which could be considered a moral issue, but the key narrative that predominated in the post in question was 'conspiracy theories'. The only post that was identified in this narrative highlights the relationship between vaccines and the soul and spirituality. In Image 8 it is possible to see how the argument is developed.

Image 9 – Post using the key narrative ‘morality and religion’*



* Repeating Steiner's speech about the VACCINE.

"In the future, we will eliminate the soul with medicine. Under the guise of a 'healthy point of view', there will be a vaccine by which the human body will be treated as soon as possible directly at birth, so that the human being cannot develop the thought of the existence of the soul and the Spirit.

Materialistic doctors will be entrusted with the task of removing the soul of humanity. As today people are vaccinated against this or that disease, so in the future children will be vaccinated with a substance that can be produced precisely in such a way that people, thanks to this vaccination, will be immune to being subjected to the "madness" of spiritual life. He would be extremely intelligent, but he would not develop a conscience, and that is the real aim of some materialistic circles.

With this vaccine, you can easily make the etheric body drop into the physical body. Once the etheric body is separated, the relationship between the universe and the etheric body would become extremely unstable, and man would become an automaton, for man's physical body must be polished on this earth by spiritual will. Thus, the vaccine becomes a kind of arymanique form; man can no longer get rid of a certain materialistic feeling. He becomes materialistic by constitution and can no longer rise to the spiritual."

Source: Facebook group 'Vacinas: O lado obscuro das vacinas', *post 92* (2020)

It is also important to highlight that some posts did not fit any of the key narratives and therefore were classified as 'unidentified'. In general, they were very short questions or texts, which did not allow the identification of elements related to any of the narratives or, even, posts that mentioned the term 'vaccine', but the main subject was another. In any case, we sought to understand these posts from the context of denialism and misinformation that marked the period of 2019 and 2020, in relation to covid-19.

Denialism from a close point of view

The denialism process in relation to covid-19 has five characteristics, according to Camargo and Coeli (2020, p. 2, our translation), who cite: “[...] 1) identification of conspiracies; 2) use of fake experts; 3) selectivity, focusing on isolated articles that go against the scientific consensus (cherry-picking); 4) creation of impossible expectations for the research; and 5) use of misrepresentations or logical fallacies”.

Observations of posts from the two anti-vaccination groups on Facebook show these points signaled by the authors, as shown by the results, with emphasis on the presentation, in a higher percentage, of narratives related to safety, efficacy and the need for vaccines; development, provision and access; and political and economic issues. These three narratives were also present in international studies.

A study conducted by Smith, Cubbon and Wardle (2020) shows that among the 1,200 posts analyzed by the researchers, two narratives were dominant among communities of three different languages (Spanish, French and English): 1) those that refer to political motives and economics behind vaccines; and 2) those referring to safety, efficacy and necessity. In the Brazilian context, the second narrative, referring to the safety, efficacy and necessity of the vaccine, appears as dominant.

Resultados do estudo de Smith, Cubbon e Wardle (2020) revelam que dentre os *posts* analisados, nos diferentes idiomas, aqueles que mais se assemelham aos encontrados do Brasil, são de língua inglesa. Das 400 postagens analisadas pelos pesquisadores, 141 se referiam à ‘segurança, eficácia e necessidade das vacinas’, destacando-se das demais narrativas. Nos conteúdos em francês essa também foi a narrativa que mais apareceu, sendo contabilizada 104 vezes, mas foi seguida de perto pelas narrativas de ‘desenvolvimento, provisão e acesso’, com 99 menções e ‘motivos políticos e econômicos’, com 97 menções.

Other studies also show the influence of English language content on Brazilian anti-vaccine narratives (AVAAZ, 2019). Of all the anti-vaccination misinformation analyzed by Avaaz (2019), much of the content was originally produced in the US and reposted by Brazilian accounts. Avaaz (2019) analyzed 30 anti-vax articles and videos corrected by Brazilian verifiers and concluded that nearly half of them were either literally translated or were translated based on information originally published in English in the United States.

It is also important to highlight the political affinity between the former President of the Republic Jair Bolsonaro (2019-2022) and the former President of the United States, Donald

Trump (2017-2020), both denialists, which fostered distrust on the part of civil society Brazil in relation to vaccines.

Narratives questioning the 'safety, efficacy and necessity' of the vaccine, identified in half of the analyzed content, that is, in 50 posts, which highlight content about adverse effects and post-vaccine sequelae, are similar to arguments against vaccination raised by other studies both national (LEVI, 2013; ZORZETTO, 2018) and international (KATA, 2010; POLAND; JACOBSON, 2001). It is important to note that in all these studies, questions were identified regarding the safety and efficacy of vaccines and, consequently, science and medicine.

Giordani *et al.* (2021) also highlight this aspect when discussing misinformation in digital media in the covid-19 pandemic. As the authors develop, the increase in news, information and interpretations that have emerged about covid-19 are located at two ends: the scientific pole and the denialist pole, where distrust and questions regarding vaccines are also anchored.

Harari (2019), on the other hand, points out that one of the bases of support of the modern social order has been the belief in technology and in the methods of scientific research (HARARI, 2019). However, the findings of the research presented here and of other studies (GIORDANI *et al.*, 2021; MASSARANI *et al.*, 2021) indicate breaking points in these bases, fueled by fake news, denialism and the construction of parallel realities about vaccines, as observed in the Bolsonaro government.

Oreskes and Conway (2013) discuss the production of distrust as a strategy. As they point out, there is a strategy behind keeping a controversy alive, spreading doubt and confusion after a scientific consensus is reached. The authors give an example of this practice, which was used by the tobacco and oil industries to prevent taking actions that could harm their profits. Part of this strategy, they analyze, consists of uniting scientists with conservative think tanks and private corporations to challenge the scientific consensus on contemporary issues, such as global warming and the impact of health products, such as tobacco, food and drinks with a high sugar content.

Understanding these constructions requires a broader look at the political right, not only in our country, but also in the world. As highlighted by political scientist Elizabeth Balbachevsky. In a debate that took place on 24 October 2022 (CNN Brasil, 2022). Professor Balbachevsky, from the University of São Paulo, when analyzing the political right in our country, highlights the importance of a broader perspective to understand it. As she points out, 'it [the right] is not a Brazilian right, it is a world right; it is a growth of a speech of anger and

that finds a lot of echo within society'. This discourse, assesses the researcher, would be linked to a social change, of which a technological transformation is part and, with it, a kind of erosion of 'the traditional foundations for building the future', within which discussions on anti-vaccine movements also put themselves.

Final considerations

In a discussion about the recent attacks on democratic education in Brazil and in the world, MacLaren (2021, p. 482, our translation) highlights: “Civilization faces a crisis of capitalism that seems to have no end and that has become even more visible due to the coronavirus pandemic”, emphasizing the double of deaths of black Americans in relation to whites, Latinos and Asians living in the United States”. This crisis, he assesses, is being marked “by a dangerous restructuring of global capitalism, based on the growing digitization of the economy and society [...]” (MACLAREN, 2021, p. 482, our translation). The author argues that this restructuring linked to digitization will contribute to the emergence of systems of mass social control, as well as greater repression.

The danger of the existence of this greater control and repression is linked to the notion of self-responsibility (MARTUCCELLI, 2007), of the entrepreneurial subject, in the neoliberal context. Caponi (2020, p. 217, our translation) when discussing covid-19 in Brazil, draws attention to the fact that neoliberalism produces subjects, in addition to consumer goods and services; a subject who claims his freedom to take risks and bear the consequences, “without having to ask the State for anything”, as determined by neoliberalism. The covid-19 pandemic makes evident the fragility of the neoliberal model of health regulated by the market and the consequent helplessness of individuals, as can be seen from the beginning of the pandemic in relation to the explicitness of the sharp social inequalities in the country.

Undemocratic, the covid-19 pandemic hit the most vulnerable populations and the most fragile classes more cruelly (CAPONI, 2020), unassisted by a federal government that fostered denialism and fake news; devalued science and misinformed the population. The anti-vaccine narratives found in the two Facebook groups analyzed were built in this scenario of misinformation and health risk, even if they were not restricted to vaccines against covid-19, they not only moved away from science but suspected it. Two of these narratives stood out: narratives associated with distrust regarding the 'safety, effectiveness and necessity' of vaccines, present in half of the contents analyzed, and narratives related to political and economic reasons,

followed, in equal numbers, by narratives related to development, provision of and access to vaccines, and freedom and independence from vaccination.

The prevalence of the first two groups of narratives highlighted above also reveals the weakening of bonds of trust between the population, scientists, industries that produce vaccines, health professionals who apply them, institutions and federal, state and municipal governments that manage it and that, paradoxically, during the period of this study, were so attacked by the government of Jair Bolsonaro, in their denialist ramblings and constructions of parallel and unscientific realities about vaccination.

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