Hope, health and cure: the meanings of the vaccine against COVID-19

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Abstract
The objective of this study was to identify the meanings that Brazilians attribute to the vaccines against COVID-19. A non-probabilistic sample of 1,817 Brazilians was used, each of whom answered a sociodemographic questionnaire and then the free word association technique was applied, with the inducing stimulus "vaccine for COVID-19". This data was analyzed using descriptive statistics in the SPSS software and the textual analysis was completed using IRaMuTeQ. The results were organized into classes: (1) "Vaccine – a glimmer of hope", portraying the expectation of healing and freedom; (2) "Vaccine – a scientific response to prevention", showing the role of research; and (3) "Vaccine – fears and political aspects", highlighting obstacles to vaccination. The results also demonstrated differences in responses depending on the region; adhesion to isolation; history of infection and hospitalization for COVID-19; being a frontline health professional; and being from a risk group. It is concluded that understanding the meanings of vaccination is essential for planning more effective interventions in immunization.
Keywords: Vaccination; Immunization; Pandemic; COVID-19; Health Psychology.

Esperança, saúde e cura: os significados da vacina contra a COVID-19

Resumo
O objetivo deste estudo foi identificar os significados que brasileiros atribuem às vacinas contra a COVID-19. Contou-se com amostra não probabilística de 1.817 brasileiros, que responderam a um questionário sociodemográfico e à técnica de associação livre de palavras, com estímulo indutor "vacina para COVID-19", analisados por meio de estatística descritiva no software SPSS e análise textual no IRaMuTeQ. Os resultados organizaram-se em classes: (1) "Vacina – um sopro de esperança", retratando a expectativa de cura e liberdade; (2) "Vacina – uma resposta da ciência para a prevenção", lembrando o papel das pesquisas; e (3) "Vacina – temores e aspectos políticos", ressaltando entraves à vacinação. Também trouxe diferenças nas evocações em função da região; adesão ao isolamento; histórico de infecção e internação por COVID-19; ser profissional de saúde da linha de frente e ser do grupo de risco. Conclui-se que compreender os significados da vacinação é essencial ao planejamento de intervenções mais efetivas na imunização.
Palavras-chave: vacinação; imunização; pandemia; covid-19; psicologia da saúde

Esperanza, salud y curación: los significados de la vacuna contra la COVID-19

Resumen
El objetivo de este estudio fue identificar los significados que los brasileños atribuyen a las vacunas contra la COVID-19. Contamos con una muestra de 1.817 brasileños, quienes respondieron un cuestionario sociodemográfico y la técnica de asociación libre de palabras, con el estímulo inductor "vacuna para COVID-19", analizado mediante estadística descriptiva en el SPSS y análisis textual en el IRaMuTeQ. Los resultados se organizaron en clases: (1) "Vacuna - un soplo de esperanza", retratando la expectativa de curación y libertad; (2) "Vacuna - una respuesta científica a la prevención", recordando el papel de la investigación; y (3) "Vacuna: miedos y aspectos políticos", destacando los obstáculos para la vacunación. También se identificaron diferencias en las respuestas según la región; la adherencia al aislamiento; los antecedentes de infección y hospitalización por COVID-19; ser un profesional de la salud de primera línea; y pertenecer a un grupo de riesgo. Se concluye que comprender los significados de la vacunación es fundamental para planificar intervenciones más efectivas de inmunización.
Palabras clave: Vacunación; Inmunización; Pandemia; COVID-19; Salud psicológica.

Introduction

The progress of medicine in recent times, through investigation and in-depth research, has made it possible to discover effective treatments for various diseases. Along with biotechnological advances in the context of immunization, the understanding of the mechanisms in the formation of pathologies has increased, enabling

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the development of effective methods in the prevention of diseases (Domingues et al., 2019; Harrison & Wu, 2020). All this has produced significant transformations in the area of health, generating important improvements to social well-being and hope for current and future generations.

Despite the undeniable advances in the area, humanity still continues to face the emergence of new infectious diseases that bring irreparable damage on a global scale. An example of this can be seen with the current manifestation of Coronavirus Disease 2019 (COVID-19), a respiratory syndrome caused by the new coronavirus, the Severe Acute Respiratory Syndrome Coronavirus 2 (SARS-COV-2) (Harrison & Wu, 2020; Jeyanathan et al., 2020).

Initially unknown to the scientific community, SARS-COV-2 was first officially registered in December 2019, in the city of Wuhan, China, resulting in several cases and deaths from COVID-19 documented around the world (Smith et al., 2020). Just three months after its discovery, faced with the global threat of the advance of this new infectious agent, the World Health Organization (WHO) declared, on March 11, 2020, the first pandemic caused by a coronavirus (Frederiksen et al., 2020; Smith et al., 2020).

Along with with the uncertainties regarding the origin and development of this disease in the human organism (with varied reactions ranging from severe to asymptomatic cases), the world was faced with the inexistence of any effective treatment that could prevent its evolution (Gao et al., 2020). Immediately, measures to contain the pandemic were established by official health bodies and international authorities. In addition, authorities and scientists from around the world joined forces to discover and produce effective and safe vaccines to combat the disease (Jeyanathan et al., 2020).

The high transmissibility of the virus, through contaminated droplets in the air, demanded the imposition of guidelines to prevent contagion worldwide, with the main measures being: the use of masks as barriers so that the virus in infected people is not transmitted to healthy people through saliva, sneezing and coughing, and restricting the movement of people, with physical distancing in everyday life and quarantine or social isolation in suspected or confirmed cases of the disease (Chu et al., 2021; MacIntyre et al., 2021). In addition, during critical periods of the pandemic, as a result of the excessive increase in simultaneous cases and saturation of health systems, stricter decrees were adopted to determine phases of lockdown, limiting the movement of the population apart from the performance of services and activities which were considered essential (MacIntyre et al., 2021).

The isolation and changes imposed on the home environment during this period, where the home started to perform multiple functions of work, study and family life, due to mobility restrictions, resulted in significant environmental stress factors (Ferreira et al., 2021; Ferreira et al., 2022). In this sense, the required prevention measures, considered essential in this period, were specific actions meant to avoid mass contagion, however, it is not feasible for the population to live with these restrictions for a long period without these having serious consequences for life in society.

Initially the use of measures that favored obtaining herd immunity through unrestrained COVID infection was considered, however, specialists refused to adopt this strategy due to the high risk of acquiring collective immunity through exposure of the population to the disease and not to the vaccine. The attempt to acquire herd immunity by contaminating a large part of the population, which may be infected by the coronavirus circulating freely without restrictions, involves serious risks of mutation of the virus and the development of new, more serious and more transmissible variants. Due to the threat to the health of the population and the projection of the number of deaths resulting from this form of herd immunity planning, it became a consensus among world health authorities that governments should join efforts in complying with prevention measures, to protect the population with the possibility of much safer intervention strategies (Frederiksen et al., 2020).

In this sense, immunizing the population through mass vaccination, without exposing it to the active virus that risks its life and health, is the most effective and safest prevention strategy (Frederiksen et al., 2020). This measure also makes it possible to protect those who are not vaccinated or who are immunologically more vulnerable, reducing the circulation of the virus and the level of transmission due to the low percentage of hosts (Frederiksen et al., 2020). It is noteworthy, however, that obtaining herd immunity through mass vaccination depends on the high efficiency rate of the vaccines used, in addition to a large capacity for full population coverage (MacIntyre et al., 2021).

It is in this context that the first vaccines began to be discussed and developed worldwide. The current advanced scientific knowledge, added to the context of public health urgency during the pandemic, made it

possible to produce safe and effective vaccines against COVID-19, in record time, for application in humans (Voysey et al., 2021). In early 2021, the first vaccines were authorized by the health regulatory agencies of each country, for distribution and emergency use in the world population, responding to people's desire for a more hopeful future in relation to the "cure" of COVID-19 (Melo et al., 2021).

More than two years after the beginning of the pandemic, with more than 10 vaccines approved in the world for safe use in humans, it appears that, with the advances in vaccination and the inclusion of new booster doses in many countries, there has been a relaxation of measures to contain the pandemic. The relaxation of restrictions took place gradually, with the reopening of workplaces and schools, restaurants and parks (Haas et al., 2022), the suspension of the mandatory use of masks and the holding of events with agglomerating crowds (Burki, 2021, Stokel-Walker, 2022), as well as permission to travel with the presentation of a vaccination passport with the required doses (Peeling et al., 2021). Mainly, there has been a significant reduction in the number of cases (Shilo, et al., 2021), and hospitalizations and deaths (Bernal et al., 2021; Scobie et al., 2021; Haas et al., 2022; Magen et al., 2022), meaning we can take the first steps towards what could be considered a "return to normality".

However, many countries have encountered obstacles in trying to stop the progression of the pandemic. This occurs mainly because of the slowness in vaccination, caused both by the hesitation of some people in relation to immunizers (Murphy et al., 2021; Sallam et al., 2021), and by the limitation of inputs/resources for the production and purchase of vaccine doses on a large-scale (Bubar et al., 2021; Montesanti, 2021).

Going against world opinion and presenting a critical scenario in the spheres of health and economy, the Brazilian federal government adopted a denialist stance on the severity of the disease, with a disincentive to adopt preventive measures (The Lancet, 2020) using anti-vaccine discourses (Calgaro, 2021; Gullino, 2021; Melo et al., 2021). The inconsistency between this position and the recommendations of the WHO and public health agencies (represented in Brazil by the Ministry of Health and state and municipal health secretariats) had a negative impact on population adherence and the advancement of vaccination (Ferreira et al., 2022). Furthermore, the political polarization in the country is a cultural barrier that transforms a global public health problem into a partisan instrument, in which the responses of adherence to preventive actions become dependent on agreement with government leaders, in turn limiting vaccination actions (Hildebrandt et al., 2021; Melo et al., 2021).

With a posture of underestimating the seriousness of the disease and disbelief about the effectiveness and need for the vaccine, the government refused commercial agreements for the acquisition of vaccines approved worldwide and, consequently, faced challenges due to the insufficiency of immunization agents for wide coverage of the population in a short space of time (Schreiber, 2021).

Expressed in numbers, while nations with fewer inhabitants, such as the United Arab Emirates, Chile and Spain, have already vaccinated more than 80% of their population, and Canada and Italy exceed 70%, Brazil ended 2021 with 60.04 % of Brazilians fully vaccinated with the necessary doses for complete immunization (University of Oxford, 2021). Despite the acceleration of the vaccination program in the country, this percentage is still severely lacking, highlighted by the difficulty of coverage of a nation with a population size like Brazil, which ended the year of 2021 accumulating more than 22 million reported cases of COVID-19, and the number of 612 thousand deaths due to disease recurrence (WHO, 2021), representing a fatality rate of 2.8% of cases that progress to death (MS, 2021).

In this context, in addition to the lack of large-scale doses, another challenge for immunization in Brazil is the level of population acceptance and adherence to vaccination (Dror et al., 2020; Loomba et al., 2021). Despite Brazil being at the top of the vaccination intention list (IPSOS, 2021), it is important to consider that the anti-vaccination movement has gained increasing notoriety in the world (Guimarães, 2020; Neves et al., 2020), worsened by the dissemination of fake news without scientific evidence about the risks of vaccines (Domingues et al., 2019). Exposure to online fake news that gives rise to disinformation is associated with a significant reduction in the population's intention to vaccinate against COVID-19 (Loomba et al., 2021).

Social and psychological aspects also interfere with the refusal or level of hesitation regarding vaccination, being related to uncertainties about the origin and efficacy of immunizers, such as doubts about their safety (Nguyen et al., 2021; Rosen et al., 2021; Sherman et al., 2021); concern about side effects and long-term effects (Razai et al., 2021; Sherman et al., 2021); and a lower perceived severity of illness (Schwarzinger et al., 2021; Williams et al., 2020).

Likewise, other factors were related to: distrust in official sources; negative attitudes against immigrants; low levels of altruism, conscientiousness and cognitive reflection; high levels of authoritarianism; high levels of social dominance, control, religious beliefs (Murphy et al., 2021); political ideologies (Peretti-Watel et al., 2020); and conspiracy theories (Sallam et al., 2021). Moreover, political factors related, for example, to the country of origin of production of a particular vaccine, were associated with the preference for a particular immunizing agent (Kreps et al., 2020).

In order to overcome these barriers, knowledge about vaccines – as an important predictor of vaccination intention – should be encouraged (Ruiz & Bell, 2021). Government strategies used in vaccination campaigns involve the social communication of reliable information about the benefits of vaccination in the principal medias; commitment to finding the unvaccinated target population; articulation of collective efforts with social, educational and scientific institutions; in addition to clarifications on the harm caused by the absence of immunization (Domingues et al., 2019).

Additionally, the recommendation of health professionals and the media has been shown to be an important stimulus for the action of getting vaccinated (Neves et al., 2020), especially in a period marked by greater hesitation in undergoing vaccination (Loomba et al., 2021). Furthermore, empathy also appears as a human capability that exerts an essential influence on adherence to preventive measures and vaccination against COVID-19 (Pfattheicher et al., 2022), as well as the individual having had negative personal experiences due to the disease (Dryhurst et al., 2020; Paul et al., 2020).

Based on the current vaccination scenario in Brazil, in an urgent attempt to reduce the number of cases and deaths in the country, understanding the meanings that Brazilians attribute to vaccination in the context of the COVID-19 pandemic is a basic criterion for the investment in public health strategies. These data can support decision-making on the content propagated in the dissemination of reliable messages to raise awareness of greater acceptance of vaccination (Loomba et al., 2021; Murphy et al., 2021), through effective actions created from scientific data.

Based on this context, the objective of the present study is to identify the meanings that Brazilians attribute to vaccines against COVID-19, with the aim of provoking an extensive reflection on the need for government planning in immunization programs that are more directed to combat serious epidemiological situations in the present and future.

Method

Research design

This research is a cross-sectional, descriptive, exploratory research using a multi-method approach. Through the methods used, it was possible to verify and understand the meanings attributed to the vaccine, using direct questioning with the participants (Ferreira, 2015).

Participants

A non-probabilistic convenience sample was used, composed of 2,111 Brazilian adults, aged over 18 years. In regard to inclusion criteria, being Brazilian and residing in the country was considered. People without internet access and/or unable to read the questionnaire did not participate in the research.

It was found that the participants had a mean age of 31.29 years (SD = 11.92). Most were female (*f* = 1,513; 71.70%), with an income of 10 or more minimum wages (*f* = 598; 28.32%), employed in formal work (*f* = 768; 36.40%), with incomplete higher education (*f* = 693; 32.80%), and lived in the Northeast region of the country (*f* = 1,603; 75.90%). They are also not part of the risk group (*f* = 1,755; 83.10%), living with a family member in the risk group (*f* = 1,280; 60.60%), were not infected (*f* = 1,551; 73.50 %) or hospitalized due to COVID-19 (*f* = 2,089; 99.00%), were not front-line health professionals (*f* = 1,886; 89.30%), and were undergoing voluntary social distancing/isolation (*f* = 1,143; 54.10%) (Table 1).

Instruments

Participants answered a questionnaire divided into two parts. First, a sociodemographic questionnaire was used, and then the participants answered the Free Word Association Technique (FWAT) (Coutinho & Do Bú, 2017), a projective instrument through which the participants' evoked responses (words or ideas) portray semantic universes associated with an object or social phenomenon. Therefore, the following instruction was asked: "What are the first 5 words that come to your mind when you hear the expression 'Vaccine for COVID-19?'".

Collection procedures and ethical aspects

This research was approved by the Research Ethics Committee under ruling No. [information omitted

Table 1.
Sociodemographic Data of Sample

		f	%
Gender	Female	1513	71.70%
	Male	598	28.30%
Income	Up to 1 minimum salary	155	7.30%
	From 1 to 3 minimum salaries	497	23.50%
	From 3 to 5 minimum salaries	392	18.60%
	From 5 to 10 minimum salaries	469	22.20%
	From 10 or more minimum salaries	598	28.32%
Occupation	Retired	56	2.70%
	Self-employed/informal work	423	20.00%
	Unemployed	135	6.40%
	Formally employed	768	36.40%
	Student	729	34.50%
Education	Up to Elementary school	24	0.11%
	Middle school	292	13.90%
	Incomplete higher education	693	32.80%
	Complete higher education	492	23.30%
	Post-Graduation	610	28.90%
Level of adhesion to social isolation	Voluntary isolation	1143	54.10%
	Not in isolation	968	45.90%
Risk group	No	1755	83.10%
	Yes	356	16.90%
Living with someone from risk group	No	831	39.40%
	Yes	1280	60.60%
Infected by COVID-19	No	1551	73.50%
	Yes	560	26.50%
Hospitalized for COVID-19	No	2089	99.00%
	Yes	22	1.00%
Health Profissional (front line)	No	1886	89.30%
	Yes	225	10.70%
Region in the country	North	50	2.40%
	North east	1603	75.90%
	Center West	45	2.10%
	South east	191	9.00%
	South	222	10.50%

for evaluation] and complied with all the guidelines on ethical aspects for research with human beings found in Resolution nº 466/12 of the National Health Council. Regarding the collection procedures, the instruments used were submitted on an online platform, along with the Free Informed Consent Terms – FICT. The link to access the instrument was released for 5 months and 21 days (from February 15 to August 6, 2021), through social networks (Facebook and Instagram) and newspaper reports. After posting, people who follow these

media were able to access the questionnaire and answer it individually, self-administered and anonymously, with an average duration of 15 minutes.

Data analysis

Data were analyzed in two stages. First, sociodemographic data were analyzed using descriptive statistics (frequency, percentage and measurements of central tendency and dispersion), using the Statistical Package for Social Science (SPSS), version 25.

The FWAT was analyzed with the help of the software *Interface de R pour les Analyses Multidimensionnelles de Textes et de Questionnaires* (IRaMuTeQ), a free program, developed by French researcher Pierre Ratinaud, which seeks to understand the structure and organization of texts, being able to discover the relationships between the lexicons that are most frequently mentioned by the research participants (Camargo & Justo, 2013). Three textual analyses were performed: (1) classic lexicographic analysis, for statistical verification of the number of responses and forms; (2) Descending Hierarchical Classification (DHC), for the recognition of the dendrogram with the classes that emerged, being that the higher the χ^2, the more associated the word is with the class, while words with $\chi^2 < 3.80$ were disregarded ($p < 0.05$); and (3) Correspondence Factor Analysis (CFA), to verify differences in responses (considering the frequency of occurrence of words and their hypergeometric indexes/χ^2) among participants from different groups based on data from: region of the country; adherence to social isolation; history of COVID-19 infection; history of hospitalization for COVID-19; being a health professional who works on the front line or not; belonging to a risk group.

Results

Classical Lexicographical Analysis and Descending Hierarchical Classification

To understand the meanings given by the participants to the vaccine against COVID-19, a corpus consisting of 2,109 text segments (TS) was generated, with the use of 1,918 TSs (90.94%). 11,501 occurrences (words, forms or vocabulary) emerged, with 1,139 distinct words and 1,087 with a single occurrence. The analyzed content was categorized into three classes, each named based on the responses that emerged: Class 1 – "Vaccine – a glimmer of hope", with 935 TS (48.75%); Class 2 – "Vaccine – a scientific response to prevention", with 661 TS (34.64%); and Class 3 – "Vaccine – fears and political aspects", with 322 TS (16.79%) (Figure 1).

Class 1, "Vaccine – a glimmer of hope", comprises 48.75% (*f* = 935 TS) of the total corpus. It presents words and roots in the interval between $\chi^2 = 4.11$ (Normal) and $\chi^2 = 279.94$ (Hope). Words belonging to this class include Hope ($\chi^2 = 279.94$); Happiness ($\chi^2 = 132.90$); Relief ($\chi^2 = 124.34$); Freedom ($\chi^2 = 118.00$); Joy ($\chi^2 = 114.08$); Life ($\chi^2 = 113.22$); Peace ($\chi^2 = 109.19$); Healing ($\chi^2 = 82.75$) and Gratitude ($\chi^2 = 58.03$).

Class 2, "Vaccine – a scientific response to prevention", makes up 34.46% (*f* = 661 TS) of the total analyzed corpus. It is formed by words and roots in the interval between $\chi^2 = 4.51$ (Progress) and $\chi^2 = 208.85$ (Prevention). This class is composed of words such as Prevention ($\chi^2 = 208.85$); Protection ($\chi^2 = 173.68$); Care ($\chi^2 = 148.38$); Necessity ($\chi^2 = 74.47$); Responsibility ($\chi^2 = 71.94$); Advance ($\chi^2 = 52.21$); Safety ($\chi^2 = 51.18$); Right ($\chi^2 = 47.37$); Important ($\chi^2 = 41.62$) and Research ($\chi^2 = 39.92$).

Class 3, "Vaccine – fears and political aspects", is responsible for 16.79% (*f* = 332 TS) of the total corpus. It covers words and roots in the interval between $\chi^2 = 4.75$ (Brazil) and $\chi^2 = 267.14$ (Needle). This class is composed of words such as Needle ($\chi^2 = 267.14$); CoronaVac ($\chi^2 = 153.27$); Pain ($\chi^2 = 97.51$); Syringe ($\chi^2 = 95.12$); Hospital ($\chi^2 = 87.52$); Disease ($\chi^2 = 79.55$); Elderly ($\chi^2 = 72.19$); Oxford ($\chi^2 = 64.87$) and Bolsonaro ($\chi^2 = 50.71$).

Factor Analysis by Correspondence

We also sought to compare the evocations (considering the frequency of occurrence of words and their hypergeometric indices/χ^2) of the participants among different sociodemographic variables: region of the country; adherence to social isolation; history of COVID-19 infection; history of hospitalization for COVID-19; being a health professional who works on the front line or not; belonging to the risk group.

The responses of participants from the Midwest region focused on the urgency of the vaccine as the best form of protection (e.g., Urgency, Cure, Death, Treatment and Protection). The responses in the Northeast region considered positive aspects of hope and faith with the arrival of the vaccine (e.g., Faith, Peace, Hope, Gratitude and Happiness). The responses in the North region are related to the future and restarting life, made possible with the end of the pandemic (e.g., Embrace, Restart, Survival, Love and Future). In the responses from the South region, there

Corpus of the text of meanings of "Vaccine" for Brazilians
1,918 TS – Usage 90.94%

Class 1 – 48.75% - 935 TS
Vaccine – a glimmer of hope

Word	*f*	χ^2
Hope	612	279.94
Happiness	136	132.90
Relief	176	124.36
Freedom	253	118.00
Joy	127	114.08
Life	260	113.22
Peace	116	109.19
Cure	269	82.75
Normality	104	73.67
Gratitude	59	58.03
Faith	81	51.34
Salvation	111	40.22
Tranquility	51	36.75
Victory	36	27.82
God	39	26.52
Restart	22	20.50

Class 2 – 34.46% - 661 TS
Vaccine – a scientific response to prevention

Word	*f*	χ^2
Prevention	157	208.85
Protection	177	173.68
Care	101	148.38
Necessity	69	74.47
Advance	52	71.94
Safety	46	53.26
Right	29	51.18
Important	94	47.37
Research	30	41.62
Politics	27	39.92
Health	32	38.80
Science	30	33.48
Urgency	270	33.31
Immunization	145	31.19
Compulsory	23	30.08
Technology	69	26.82

Class 3 – 16.79% - 322 TS
Vaccine – fears and political aspects

Word	*f*	χ^2
Needle	55	267.14
Coronavac	33	153.27
Vaccine	29	145.95
Covid	55	143.37
Pain	22	97.54
Syringe	19	95.12
Hospital	20	87.52
Disease	28	79.55
Elderly	19	82.61
Oxford	28	64.87
Virus	15	67.41
Bolsonaro	23	50.71
Isolation	9	44.82
Effect (colateral)	10	43.51
Death	12	43.24
Unsafe	14	40.96

Figure 1. Descending hierarchical classification organization chart.

is a reference to the advances in science and technology, which made the creation of the vaccine possible (e.g., Technology, Recovery, Medicine, Science and Responsibility). Finally, the evocations in the Southeast region focused on the need for investment and the role of governments in the availability and education for the vaccine (e.g., Investment, Government, Reactions, Advance, Life).

The responses from participants who were in social isolation focused on aspects related to the positive consequences of the vaccine, as a synonym for prevention, return to health and freedom without social isolation, in addition to emphasizing the role of science in its creation (e.g., Freedom, Tranquility, Prevention, Health and Science). People who were not in social isolation focused on issues related to the negative consequences of the vaccine - the reactions caused and questions about its effectiveness (e.g., Reaction, Uncertainty, Insecurity and Collateral).

The responses from participants who had already been infected by COVID-19 mainly showed the hope and possibility of restarting life with the arrival of the vaccine (e.g., Restart, Embrace, Hope, Life and Faith). Those who had never been infected considered responses related to the priority that the government should give to prevention (e.g., Security, Overcoming, Antibodies, Priority, and Government).

The responses of participants who had been hospitalized for COVID-19 presented words aimed at affection, overcoming and health care (e.g., Embrace, Restart, Salvation, Health and Healing). People who had never been hospitalized for COVID-19 prioritize words such as the content of health care and care for others (e.g., Immunization, Respect, Collective and Opportunity).

The responses of health professionals who work on the front line presented words focused on the positive meanings of the vaccine and its effects, as well as their responsibility as a health worker (e.g., Trust, Improvement, Advancement, Life and Responsibility). Participants who are not health professionals presented words with content focused on health care, positive emotions and better perspectives (e.g., Immunization, Respect, Renewal and Prosperity).

The responses of participants in the risk groups for COVID-19 present words that contextualize an ambivalence of meanings for the vaccine - fear and insecurity of taking the vaccine versus relief with what it represents (e.g., Insecurity, Fear, Relief, Joy and Gratitude). People who are not in the risk groups used words related to pandemic containment care with themselves and others and positive emotions due to the arrival of the vaccine (e.g., Elderly, Necessary, Mask, Relief).

Discussion

Since the beginning of the spread of the new coronavirus in the world, Brazilian scientists have already reported concern about the evolution of the pandemic in Brazil, justified months later with the country having one of the highest numbers of cases and deaths from COVID-19 (MS, 2021; WHO, 2021). With the development of effective vaccines against the SARS-COV-2 virus (Bernal et al., 2021; Voysey et al., 2021), a new uncertainty has arisen regarding the acceptance of the population to the immunization process (Dror et al., 2020; Loomba et al., 2021). In this sense, from this study, we sought to understand the meanings that Brazilians give to the vaccine against COVID-19.

Moving away from the context in which psychological symptoms and negative emotions permeated a long and lasting period of the pandemic (Melo et al., 2021), the data from Class 1 highlighted that the vaccine presents positive feelings of hope, happiness and relief for this new pandemic phase. The reduction of cases and hospitalizations in locations that started vaccination early (Shilo et al., 2021) can be an important factor in creating confidence in the population in this measure. While the increase in the number of hospitalizations with a prevalence of unimmunized people demonstrates, in fact, the importance of a good immune response and protection for those who underwent vaccination (Scobie et al., 2021).

The positive analysis that the participants give to the vaccine as a form of hope in the prevention of COVID-19 converges with the high percentage of Brazilian adults who intend to get vaccinated as soon as possible (89.9%) - considering those who had not yet been vaccinated –, keeping Brazil at the top of the vaccination intention list compared to fifteen other countries (IPSOS, 2021). Expectations for better days also depend, in addition to intention to vaccinate, on the fact that there are enough immunizers to vaccinate a wide population coverage in order to achieve herd immunity to protect the population (MacIntyre et al., 2021).

Unlike some nations that have a surplus of doses, but do not advance in vaccination due to lack of adherence from a part of the population, Brazil does not have the resources to accelerate this process, even in the face of a high percentage of vaccination intentions in the country. Therefore, the disincentive and delay in negotiations for the acquisition of vaccines, anti-vaccine speeches and actions of disinformation, which are characterized in actions of disservice and crime against public health by the representatives of the Brazilian federal government (Hildebrandt et al., 2021; Schreiber, 2021), are configured as determining factors for the slowing down of vaccination progress in the country and the current difficulty in the lack of immunizations (Montesanti, 2021).

In practice, this process still presents considerable challenges, in that some vaccinated individuals, after the first dose, do not complete the immunization for various different reasons (Montesanti, 2021) or even reduce their care, believing that the virus is no longer a risk to their health or to that of others. It is noteworthy, however, that the high frequency of the word "cure" can present itself as a trap in this process, as the vaccine works as a way of preventing the disease, but does not exclude the possibility of infection and, even more, does not prevent the transmission of the virus. Thus, while there is still not enough immunization for the entire population, it is necessary to continuously encourage other forms of preventive behavior, especially related to the use of masks and physical distancing (Schreiber, 2021).

The reaction of the scientific community in the production and approval of effective and safe vaccines in the prevention of COVID-19 was also an aspect highlighted by the responses in Class 2. The discussion around vaccination is legitimate insofar as the advance in scientific knowledge in regard to the development of vaccines made it possible to reduce mortality cases (Harrison & Wu, 2020) and even eradicate diseases at other times of human existence (Domingues et al., 2019). In view of this, the vaccine appears as the most effective form of prevention in the long term and has previously shown a history of success in the results against other serious pathogens, enabling a current scenario of greater conviction of this health technology.

In addition, despite the spread of the anti-vaccination movement, Brazil has been a model of immunization in the world, with the existence of the

National Program for Immunization of the Universal Health Service - SUS (PNI/SUS) and an efficient public health system that can influence the containment of conspiracy theories in this area (Guimarães, 2020). The existence of a program that provides and applies vaccines for free and with access for the entire population contradicts anti-vaccine arguments related, for example, to the enrichment of the pharmaceutical industry to the detriment of the low-income population.

In addition to the delivery of the vaccine as a preventive technology, psychological, social and political aspects interfere in the decision-making for immunization. In this sense, fears and political and social aspects still permeate beliefs around vaccination, as identified in Class 3. The reference to certain vaccines, such as CoronaVac and Oxford-AstraZeneca, refer to still recent discussions about the choice of immunizers based on specific aspects of the vaccine, and not on availability.

Adherence to vaccination or preference for a particular type of immunizer was associated with characteristics related to efficacy, side effects, duration of protection, and country of origin (Kreps et al., 2020). However, given the approval and guarantee of efficacy and safety of vaccines available for COVID-19, in addition to the shortage of vaccine doses, the preference for immunizers from specific manufacturers - due to disputes and political interests - can put the lives of most of the population at risk.

This situation can be even further exacerbated by denialism regarding the risks of the disease and the dissemination of fake news about the effects of vaccination (Domingues et al., 2019). In a period of urgency for the acquisition of vaccines in the world, the representative of the Brazilian federal government underestimated the effects of the disease on the population and discouraged the very act of getting vaccinated (The Lancet, 2020, Calgaro, 2021, Gullino, 2021). Discourses without scientific basis about the lack of effectiveness of the vaccine and conspiracy theories about its adverse effects are aspects that present misinformation and trigger uncertainties and fears in the Brazilian population, preventing assertive decision-making in relation to the vaccine (Loomba et al., 2021).

The population size, unavailability of large-scale doses, inexperience in health emergencies of this dimension and the negligent management of representatives of the federal government at the forefront of a pandemic, put Brazil in a situation of extreme urgency in controlling the pandemic. This scenario can only be reversed with the prioritization of investment in making sufficient doses available in a timely manner, which could help avoid the worsening of the situation by the emergence of new variants.

Nevertheless, the data also revealed different meanings for certain groups of participants, divided according to certain sociodemographic and clinical characteristics. It was found that words of hope, related to the advancement of science and the need for government investments, prevailed among participants from different Brazilian regions. This same notion was demonstrated by Brazilians who were in social isolation, visualizing the possibility of greater freedom and tranquility through immunization as a prevention of the advancement of the pandemic. The vaccine brings a new meaning of optimism, after a long period of uncertainty due to the absence of an effective treatment against COVID-19 (Gao et al., 2020), of demanding restrictions on movement and contact with other people (Chu et al., 2021; MacIntyre et al., 2021), resulting in devastating consequences for the physical and mental health of the population.

The infected who were hospitalized due to COVID-19 demonstrated feelings aimed at hope and the possibility of a fresh start with the arrival of the vaccine, which indicates its wide acceptance. People who have had personal experiences with the negative effects of the virus on the body have a greater perception of risk of the disease, which influences their agreement to invest in preventive behaviors (Dryhurst et al., 2020), including vaccination (Paul et al., 2020). The non-infected, in turn, highlighted the need to prioritize this action by the government, again entering into debate the difficulty of acquiring doses to accelerate this process (Montesanti, 2021).

Among the participants who were not part of the risk group, as well as those who were not hospitalized for COVID-19, the meanings of the vaccine revealed themselves in care for the other and the collective, especially when it comes to taking the necessary measures such as a form of protection for those who are part of these groups at greater risk. Empathy has been shown to be an important factor in adherence to preventive measures against COVID-19 (Pfattheicher et al., 2020), being also related to the intention to vaccinate to protect those from vulnerable groups, who are at greater risk of severely developing the disease (Pfattheicher et al., 2022).

What is more, negative reactions to being vaccinated could be observed among participants who were not in isolation, which showed their perceptions of

uncertainty and insecurity regarding the side effects of the vaccine. In a May 2020 study of factors related to COVID-19 vaccination, with the participation of 1,056 US adults, a positive correlation was found between the intention to be vaccinated and engagement in COVID-19 preventive behaviors, such as social isolation (Latkin et al., 2020). Thus, hesitation to vaccinate may be associated with greater denialism regarding the severity of the disease (Schwarzinger et al., 2021; Williams et al., 2020).

On the other hand the indication from the participants of the risk groups of a possible insecurity and fear can be justified by their being the first people to be submitted to vaccination against COVID-19. After confirming its safety and efficacy (Bernal et al., 2021, Voysey et al., 2021), world authorities established a priority vaccination order, starting with those groups at risk, who would be the first to have contact with the vaccine in their body after the clinical trials (Bubar et al., 2021; MacIntyre et al., 2021). Just as the emergence of a coronavirus, still then unknown, brought fears to the population about its consequences, exposure to a new treatment can also cause fear about the short and long-term consequences after vaccination.

Some of the justifications that may be related to these priority groups who do not intend to be vaccinated involve, mainly, a concern with side effects (Razai et al., 2021; Sherman et al., 2021) and vaccine insecurity (Nguyen et al., 2021; Rosen et al., 2021; Sherman et al., 2021). The short time in which they were developed, lack of trust in the government and the desire to wait to confirm their safety over time also support this decision (Nguyen et al., 2021). Even so, the participants revealed a feeling of relief, joy and gratitude for the vaccine, in that they are part of risk groups that suffered the worst effects of the disease in the first year of the pandemic.

Considering that knowledge about the vaccine and rejection of conspiracy theories are considered predictors of the intention to be vaccinated (Ruiz & Bell, 2021), clear and objective communication about the entire vaccination process is essential. Likewise, it is essential that there is an identification of the groups that show greater hesitation, in order to develop more assertive messages of encouragement based on scientific evidence.

Final Considerations

This study presents the meanings that Brazilians attribute to vaccines to prevent COVID-19. From the data found, it was identified that the vaccine represents a glimmer of hope for the end of a pandemic that has generated health, social, economic and political problems around the world. The credit given to this quick and effective response is attributed to science and the intense investment of researchers from different countries and the private sector of the pharmaceutical industry. However, barriers to its adhesion and propagation emerge, which are manifested through fears of side effects and political resistance. These data contribute to the international scientific literature and offer support to governments to formulate more effective intervention strategies, bringing quality information to the population, demystifying myths and anxieties, and calling for a movement of ethical-aesthetic-political struggle.

Like all scientific research, although the results present a significant contribution to the global context of the advancement of vaccination, this research has limitations. One of these limitations refers to the non-probabilistic sample, composed primarily of residents from the northeast region of the country, not representative of the Brazilian population. It is emphasized, however, that it is not the purpose of this study to generalize the results, but rather to explore this reality. Another limitation refers to the online collection format, which may restrict the access of participants who do not have access to the internet or who are illiterate. This was, however, a methodological decision that balanced cost-benefit, as the online collection method allowed for the participation of people from different regions of the country, which can also be considered a positive differential of the study.

We highlight the need for further studies on the meanings of vaccination. It is suggested that studies be carried out with more representative samples of the population and with a longitudinal design to assess the meanings of the vaccine at different stages during and after the pandemic. Finally, research has shown the relationship of other variables with hesitancy to vaccination, such as religiosity and political positioning, so it is recommended that these variables be included in future studies.

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