

The importance of knowledge about vaccines and the impact in vaccination coverage

A importância do conhecimento sobre as vacinas e o impacto na cobertura vacinal

Jéssica Leitão Morilla¹

Orcid: <https://orcid.org/0000-0003-0443-057X>

Mayara Cristina de Oliveira²

Orcid: <https://orcid.org/0000-0003-4785-169X>

Isabela Romeu Lorenzon de Oliveira³

Orcid: <https://orcid.org/0000-0002-0934-2168>

Beatriz Gianini Knudsen⁴

Orcid: <https://orcid.org/0000-0001-9604-9885>

Francesca Tromba⁵

Orcid: <https://orcid.org/0000-0003-0537-3992>

Julia Tramonte Pereira⁶

Orcid: <https://orcid.org/0000-0003-0231-804X>

Patrícia Colombo-Souza⁷

Orcid: <https://orcid.org/0000-0003-0247-4245>

Abstract

Introduction: From a historical point of view, the National Immunization Program in Brazil is one of the most successful in the world and includes wide dissemination apparatus. The drop in vaccination coverage is a multifactorial phenomenon that has been observed worldwide in recent years and communication is a relevant factor in vaccination decisions. **Objective:** To assess adherence to Brazilian Vaccination Campaigns, understand the reasons for choosing not to be vaccinated, and evaluate the knowledge of the population about vaccines. This is a cross-sectional study accomplished through the application of a questionnaire to residents of the São Paulo city south side area. In total, 94.5% of respondents reported knowing what a vaccine is, which has also been observed in other studies. However, lack of knowledge about vaccines and vaccine-preventable diseases influenced the low vaccine coverage; although 97.3% believe that vaccines are effective, 15.3% say they are not completely safe, mainly due to adverse events, which, although infrequent and not serious, were also mentioned by 26% of those who mentioned fear of being vaccinated (16%). This fact has previously been observed in other articles. In addition, 16% do not agree with mandatory vaccination. These findings highlight the importance of health communication and the dissemination of truthful information about the vaccination process, with the lack of information being the main variable related to the drop in vaccination coverage.

Keywords: vaccination; vaccination refusal; vaccination coverage; health education

Resumo

Introdução: Quando olhamos historicamente, o Programa Nacional de Imunizações no Brasil é um dos mais exitosos e possui amplo aparato de divulgação. A queda da cobertura vacinal é um fenômeno multifatorial observado mundialmente nos últimos anos e a comunicação apresenta-se como um fator relevante nas decisões de vacinação. **Objetivo:** Avaliar a adesão às

¹ E-mail: jessicalmorilla@gmail.com

² E-mail: coliveira.mayara@gmail.com

³ E-mail: isarlorenzon@hotmail.com

⁴ e-mail: bgianinik@gmail.com

⁵ E-mail: francescatr02@gmail.com

⁶ E-mail: utramontep@hotmail.com

⁷ E-mail: pcolombo@prof.unisa.br

^{1, 2, 3, 4, 5, 6, 7} Universidade Santo Amaro/Unisa, São Paulo, Brasil.

Campanhas de Vacinação brasileiras e o conhecimento da população sobre a vacinação, além de conhecer os motivos pela escolha de não se vacinar. **Materiais e Métodos:** Trata-se de um estudo transversal realizado pela aplicação de questionários na população residente da extrema Zona Sul da cidade de São Paulo. **Resultados:** 94,5% dos entrevistados afirmaram saber o que é vacina, o que também foi observado em outros estudos. Entretanto, a falta de conhecimento sobre as vacinas e as doenças imunopreveníveis influenciaram na baixa cobertura vacinal. 97,3% acreditam que as vacinas fazem efeito, mas, 15,3% afirmam que elas não são totalmente seguras, principalmente por conta dos eventos adversos, que, apesar de infrequentes e não graves, também foram citados por 26% daqueles que referiram medo de serem vacinados (16%), fato previamente observado em outros artigos. Além disso, 16% não concordam com a obrigatoriedade das vacinas. **Conclusão:** Tais achados realçam a importância da comunicação em saúde e da disseminação de informações verídicas sobre o processo da vacinação, sendo a falta de informação a principal variável relacionada à queda da cobertura vacinal.

Palavras-chave: vacinação; recusa vacinal; cobertura vacinal; educação em saúde

Introduction

The National Immunization Program (NIP) is one of the most successful programs in the Unified Health System (UHS), maintaining high rates of vaccine coverage (VC) since its inception. However, as of 2018, measles, a disease considered to have been eradicated, has returned to Brazilian statistics, causing 15 deaths in 2019, 14 of them in São Paulo, indicating a possible decline in VC¹. In addition, since 2016 the polio vaccine has had lower coverage rates than those considered ideal according to the Ministry of Health, with a value of 51.54% in 2019². As a result, the discussion about the possible return of previously eradicated diseases has been raised^{3,4}.

The national vaccination calendar in 2020 offered 16 types of vaccines, aiming to reach at least 20 types of pathogens. This calendar is divided into age groups, and begins at birth, with the BCG vaccine, for tuberculosis, and covers all stages of life, including campaigns and reinforcements for older adults⁵. In all, the NIP has the distribution of 45 immunobiologicals, of which 28 are vaccinations, 13 are hyperimmune sera, and 4 are immunoglobulins, with an annual average acquisition of 300 million doses (2017)⁶.

According to the World Health Organization (WHO), the concept of vaccine hesitancy proves to be complex as

it varies according to place, time, and vaccine, without a uniform presentation. When analyzing a spectrum that ranges from total refusal of vaccination to partial restriction, a significant percentage of the population can be observed. From this, the “3Cs” confidence (in the vaccine management system, health professionals, and public policies), complacency (when not perceiving the vaccination as necessary), and convenience (where ease of access, available resources, and physical and economic availability are considered)^{7,8}. In this way, it is possible to analyze aspects that vary from the information that the user receives, the doctor-patient relationship, to the geographic extension of the country and the underfunding of the UHS in recent years, during which access to immunobiological material has become more restricted⁹. Succi⁸ also highlights that vaccines are victims of their own success, observing that epidemiological changes since the emergence of immunobiologicals, such as the disappearance of many vaccine-preventable diseases, have led to people forgetting the sequelae of these diseases, meaning prevention is no longer a priority.

Vaccination campaigns have always had a prominent place when it comes to health communication. In the Campaign against Polio of the 90s, there was a great movement of communication vehicles, allied to the sectors of education, culture, clubs, services, and class associations, such

as unions. Subsequently, with the entry of advertising agencies, health advertising has moved to professional sectors¹⁰.

The objective of the current study is to assess the population's knowledge about vaccines and adherence to the Vaccination Campaigns designed by the Ministry of Health in recent years and to understand the reasons for choosing not to be vaccinated.

Materials and methods

Sample and type of study

A cross-sectional study carried out through the application of questionnaires

between the months of November 2019 and March 2020 in the population that lives in the extreme south of the city of São Paulo. Both questionnaires were approved by an ethics committee under opinion no. 3,580,528 and CAAE: 20653219.2.0000.0081.

In total, 150 individuals participated in the study. The sample (table 1) was 82% female, with ages ranging from 18 to 72 years, with an average of 40.7 years; 38.9% brown and 13.5% black. With respect to education, 73% had at least completed high school. 78% had children, with 2 to 3 children being the most common (55%).

Table 1 – Sociodemographic characterization of the sample.

Sociodemographic characteristic	N	%
Sex		
Female	123	82.00
Male	27	18.00
Total	150	100.00
Age Group		
18 to 25	17	11.30
25 to 30	22	14.70
31 to 40	49	32.70
41 to 50	30	20.00
51 to 60	17	11.30
60 and more	15	10.00
Total	150	100.0
Schooling		
No Education/Incomplete Elementary School	18	13.70
Elementary School	18	13.70
High School	78	59.00
Higher Education	36	27.30
Total	150	100.0
Ethnicity		
White	67	44.90
Mixed	58	38.90
Black	20	13.50
Others	4	2.70
Total	149*	100.0
*1 did not respond		
Children		
Yes	117	78.00
No	33	22.00
Total	150	100.0
Number of children		
1	42	35.90
2 to 3	64	54.70
More than 3	11	9.40
Total	117	100.0

Source: Research data 2020.

Study design

Data were collected at five different times: at SESC Interlagos, located in the Parque Colonial neighborhood, on the 2nd and 30th of November 2019, between 8 am and 4 pm. Then, on February 15, 16, and 17, 2020, between 12 noon and 2 pm, on streets in the Jardim das Imbuías neighborhood. Both areas are located in the southern region of the city of São Paulo, in the region of Capela do Socorro and the participants were selected for convenience.

Inclusion and Exclusion Criteria

The inclusion criteria were: living in the area to be studied, being at least 18 years old, and returning the Informed Consent Term (ICT) and Assent. There were no exclusion criteria.

Procedures

Two specific questionnaires were prepared; one sociodemographic questionnaire, to characterize the sample, and another to identify the sociocultural relationship and knowledge about vaccination, with the aim of correlating the information. The sociodemographic aspects addressed were: age, sex, ethnicity, schooling, occupation, and if the participant had children, how many.

Regarding the vaccination questionnaire, the variables analyzed were: adherence, through the questions: *“Do you have a vaccination card? If not, why not?”*, *“Is the vaccination record complete?”*, *“If you have children, have they been vaccinated? Is their vaccination record complete? If not, why not?”*, *“If you answered no to the previous questions, were the health professionals who are monitoring you informed?”*, *“Were you vaccinated against measles in the last campaign?”*, *“Were you vaccinated against yellow fever in the last campaign?”*, *“In the territory where you live, was an active search for non-vaccination cases*

carried out?”; and knowledge, through the questions: *“Do you know what a vaccine is and what it is for?”*, *“Do you believe that vaccines work?”*, *“Do you believe that vaccines are safe?”*, *“What is your main source of vaccine information?”*, *“What vaccines do you know/have you heard of?”*, *“Do you think that vaccination should be mandatory?”*; *“Are you afraid of being vaccinated? If so, why?”* and *“Do you believe/use any other method of ‘protection’, in addition to vaccination? If yes, which?”*.

Study location

The south region of the city of São Paulo is made up of 12 districts that have the lowest Human Development Index (HDI) in the municipality and the highest Social Vulnerability Index (SVI). It is the region with the second highest number of unemployed people¹¹. Regarding the use of SUS, the southern region has the second highest rate of SUS-individuals¹¹. Regarding the use of the UHS, the southern region has the second highest rate of UHS-dependent individuals in the municipality and the region with the largest number of UHS-dependent residents (Capela do Socorro); it also covers three of the five sub-municipalities with a population exclusively using public health above 300,000 inhabitants¹².

Statistical analysis

The data obtained in the questionnaires were computed and correlated in Microsoft Excel. Data are described as relative frequency and analyzed statistically using the Cochran G test.

Results

According to the results obtained, shown in table 2, it was observed that a minority did not have a vaccination card and the main reason for this was its loss. With

respect to children who do not have a complete vaccination card, the most commonly reported cause was the lack of vaccine, especially the pentavalent vaccine.

Regarding the vaccination campaigns of the Ministry of Health against yellow fever (2018) and measles (2019), in the studied population, neither of the two campaigns reached 95% VC. The active search for cases of non-vaccination in these two situations occurred only in the

residential region where 65% of respondents knew how to respond.

With respect to the sources used to collect information about vaccines and vaccination campaigns, television/radio is the most used, followed by social media, and information in the Basic Health Unit and health professionals appear in third and fourth places, respectively, as shown in table 3 (p= 0.0000).

Table 2 – Vaccination characterization of the studied population.

Vaccination characterization	N	%
Do you have a vaccination card?		
Yes	129	86.6
No	20	13.4
Total	149*	100.0
*1 did not respond		
Are your children vaccinated?		
Yes	116	99.1
No	1	0.9
Total	117	100.0
Is your children's vaccination card complete?		
Yes	110	94.0
No	7	6.0
Total	117	100.0
Have you taken the yellow fever vaccine?		
Yes	122	81.4
No	28	18.6
Total	150	100.0
Have you taken the measles vaccine?		
Yes	78	52.0
No	72	48.0
Total	150	100.0
Is there an active search for non-vaccination cases?		
Yes	93	65.1
No	50	34.9
Total	143**	100.0
**7 did not respond		

Source: Research data. 2020.

Table 3 – Main source of information on vaccines for the studied population .

TV/Radio	Social Media	UBS	Health Professionals	Trustworthy People	Others
∑ = 112	∑ = 51	∑ = 43	∑ = 31	∑ = 20	∑ = 7
% = 42.4	% = 19.3	% = 16.3	% = 11.7	% = 7.6	% = 2.6

Cochran's G

Calculated G = 206.53

p= 0.0000*

Source: Research data. 2020.

Regarding knowledge of the population about what vaccine is, 94.5% said they know what it is, according to table 4. Among the answers presented by the interviewees, 73.7% were related to:

protection, combat, prevention, control, and immunization against diseases. Despite this, a percentage of people reported that they know what a vaccine is, but do not know how to explain.

When researching and comparing knowledge about the main vaccines made available by the UHS, shown in table 5, measles, yellow fever, and influenza

vaccines stood out as the best known, followed by hepatitis B, tetanus, rubella and mumps, and diphtheria, with rabies being the least known (p= 0.0000).

Table 4 – Knowledge and confidence of the population about vaccines.

Knowledge and confidence of the population	N	%
Do you know what a vaccine is?		
Yes	137	94.5
No	8	5.5
Total	145*	100.0
* 5 did not respond		
Should vaccination be mandatory?		
Yes	126	84.0
No	24	16.0
Total	150	100
Do you believe that vaccines are safe?		
Yes	127	84.7
No	23	15.3
Total	150	100.0
Do you believe that vaccines have an effect?		
Yes	146	97.3
No	4	2.7
Total	150	100.0
Are you afraid of being vaccinated?		
Yes	24	16.0
No	126	84.0
Total	150	100.0
Do you believe/use any other method of "protection", besides vaccination?		
Yes	68	46.0
No	80	54.0
Total	148	100.0
2* did not respond		

Source: Research data. 2020.

Table 5 – Knowledge of the population studied about the main vaccines.

Yellow Fever	Hepatitis B	Tetanus	Rubella	Influenza	Measles	Rabies	Diphtheria	Mumps	Others
Σ = 139	Σ = 125	Σ = 129	Σ = 123	Σ = 135	Σ = 143	Σ = 108	Σ = 74	Σ = 118	Σ = 14
% = 12.5	% = 11.3	% = 11.6	% = 11.1	% = 12.2	% = 12.9	% = 9.7	% = 6.7	% = 10.6	% = 1.3
Cochran's G									
Calculated G = 593.88					p= 0.0000*				

Source: Research data. 2020.

Regarding confidence in vaccines, the data are presented in table 4. Although 97.3% believe that vaccines have an effect, 15.3% still think they are not completely safe. Among the reasons presented to justify this opinion, the following can be

mentioned: side effects, followed by distrust of public vaccines, especially those related to campaigns and issues related to storage, transport, and manufacturing, as well as the information available on social media.

Still on this subject, 16% reported being afraid of being vaccinated. The main causes pointed out by the interviewees were: fear of pain and/or the needle (30.43%), fear of side effects (26%), fear of not knowing how vaccines are prepared (4.4%), professionals are not trained to apply the vaccine correctly (4.4%), and simply because they do not think vaccination is necessary (4.4%). Finally, 30.43% of this group did not know why they are afraid of vaccines.

In addition, 46% reported using other methods of protection against diseases in addition to vaccination. Hygiene and daily care were the most commonly cited by the population (28%), followed by: medication use (16%), lifestyle (adequate food and physical activity) (13.2%), natural methods, such as teas, homeopathies, vitamins, and supplements (9%), avoiding mosquito bites by using repellent, window screens and avoiding standing water (6%), avoiding stuffy and crowded places (4.5%), religion (3%), use of personal protective equipment, such as masks and gloves (1.5%), and condom use (1.5%), and 4.5% did not know how to respond.

Discussion

Vaccination is an extremely effective active immunization method, used since the 19th century. However, the Brazilian immunization policy started to be structured only in 1973, with the creation of the NIP.

In order to reduce the incidence of preventable diseases, the NIP provides universal distribution of vaccines throughout the national territory and, due to its scope and complexity, it is often compared to developed country programs¹³. From 1990 the 95% VC target was reached. However, since 2016, an important reduction has been observed, which is concerning the health authorities⁸.

The fall in VC is a multifactorial phenomenon, being a consequence, among other factors, of vaccine hesitancy. According to the SAGE (Strategic Advisory

of Experts on Immunizations), a WHO body, hesitancy is related to three variables, which were also observed in this study: confidence, complacency, and convenience¹⁴.

Confidence relates to the population's effectiveness and feeling of security regarding vaccines, their production, the storage system, and the professionals involved in the process¹⁴. In the current study, a total of 97.3% of respondents reported believing that vaccines are effective, which is in line with the study carried out by Lane et al¹⁵ with data from the WHO notification form, with individuals from 67 countries, which concluded that Brazilians believe in the effectiveness of vaccines, especially when compared to Europeans. However, 15.3% do not consider them safe, and the reasons cited by the participants in the present study are the same as those provided by the WHO¹⁴ and those found by Viegas et al¹⁶ in their study with adolescents: fear of side effects, distrust of vaccines provided by the public network, and methods of storage, transport, and manufacture. In addition, 16% of respondents reported fear of being vaccinated and, when asked about the reason, several responses were related to unreliability, namely: fear of side effects (26%); manufacturing method (4.4%), and application (4.4%).

Fear, in general, is a recurring issue, along with a decrease in concern about diseases controlled by immunobiologicals¹⁰. The anti-vaccine movements have significant relevance among developed countries, as well as spreading misinformation in developing countries.⁷

The spread of misinformation on social media seems to contribute to the reported unreliability^{10,17}. In the past, individuals were informed through mass communication vehicles, such as television and radio, which were reported in this study as the main sources of information by 112 participants. However, with the popularization of the internet, social media has started to occupy this role, and is

considered by 19.3% of the interviewees as the main vehicle of information about vaccination when compared with other possible sources.

The phrase “a lie repeated a thousand times become true”, by Joseph Goebbels, one of the main people responsible for promoting anti-Semitic culture in Nazi Germany, appropriately fits the current scenario, in which there is rapid spread of false news¹⁸. Anti-vaccination groups, driven by the speed of sharing in the digital age, use this medium to spread their ideals around the world^{10,18,19,20}. The study published by Teixeira et al¹⁰, investigated the negative impact of fake news on the yellow fever vaccination campaign in Brazil, and concluded that the main untrue news promoted by these groups are related to possible adverse events of vaccines. However, these events are, in general, infrequent and mild^{10,14}. Thus, the benefits promoted by vaccination outweigh the risks, and the spread of contrary statements creates risks to the public health of the country.

Complacency concerns the low perception of the need for vaccination and the risks that vaccine-preventable diseases are able to offer¹⁴. This phenomenon is related to several factors, one of which, contradictorily, is satisfactory adherence to vaccination^{7,14}. When the VC remains within the established parameters for a prolonged period, it can result in a significant decrease in the incidence or even eradication of certain diseases, as is the example of poliomyelitis.

When analyzing VC rates in the city of São Paulo in the last two years for yellow fever and measles, some statistically relevant changes can be seen: according to data provided by DATASUS, the yellow fever VC recorded in 2018 in the capital was 55.89%, significantly below the Ministry of Health's 95% target. For the year 2019, this rate increased to 75.91%, still below the target, but with a visible improvement in the reach of vaccinated individuals²¹. With respect to the

respondents in the current study, 81.4% of respondents reported having been vaccinated in the 2018 or 2019 campaign against the virus. Although this figure is still below the target, the VC rate in the capital is higher, which could point to relative effectiveness of health communication actions in the analyzed region. However, this does not negate the need to maintain public policies aimed at vaccination, with the aim of reaching the goal of 95%.

Among the main policies to encourage immunization, the influence of health communication in schools, through the media, among family members, or even through the bond with health professionals stand out. These strategies provide a reduction in the individual's distance from their own health, and an expansion in access to information^{22,23}.

In 2018, the VC in the capital of São Paulo for the 1st dose of the triple viral vaccine was 92.69%, 85.49% for the 2nd dose, and 42.66% for the tetraviral vaccine. In 2019, all these percentages declined²⁴. In the current study, only 52% reported vaccination in the 2019 campaign against the virus. Thus, the data from DATASUS in the last 2 years and the research data showed a value lower than the target of 95%. Although all statistics are below the target, there is an important discrepancy between what was observed by the DATASUS database and that reported by the survey respondents, a fact that was expected, considering the greater specificity of the sample and the regional cut for the study, compared to the entire population of the capital.

Finally, the convenience phenomenon concerns the availability of vaccines, their easy geographical access, the appeal of health professionals and public agencies, and the amount paid for them¹⁴. All vaccines in the vaccination calendar are distributed free of charge by the UHS, which is one of the reasons why the Brazilian NIP is seen as a world reference¹³. However, availability depends on other factors, such as the pentavalent

vaccine. Its absence was the main cause of incomplete vaccination records reported by the parents in this study.

Its lack was related to the following note issued by the Ministry of Health, through the Federal Official Gazette and Resolution No. 1,545 of June 11, 2019, through PAHO, that the vaccine failed a quality test carried out by the National Institute of Quality Control in Health (INCQS) and analysis by the National Health Surveillance Agency (Anvisa)^{25,26}. Therefore, purchases from the supplier were interrupted by WHO/PAHO. According to the states and municipalities, the supply has been out of date since July 2019²⁵.

Actively searching is an essential tool for monitoring the VC of a given population and for creating strategies to increase immunization rates. In the context of vaccination, it allows health professionals to inform individuals about the dates of vaccination campaigns, the availability of immunobiologicals at health posts in the region, as well as the need for vaccination according to the particular immunological situation of each individual, which increases the convenience of vaccination²⁷.

However, 34.9% of the participants denied the occurrence of an active search in the region where they live, and of these, 14% did not have a vaccination card. Thus, the importance of this epidemiological surveillance strategy is evident in order to achieve the desired VC.

In addition to the three characteristics: confidence, complacency, and convenience, the Matrix of Determinants of Vaccine Hesitancy should be highlighted, which presents the main factors that influence vaccine refusal. The determinants are divided into 3 categories: historical/sociocultural, perception of the group and the individual, and vaccination issues. The power of influence of each determinant depends on the context of each person's life, such as: educational and socioeconomic level, religion, sex, and even knowledge about vaccines⁷. In general, it

was noticed that some determinants were highlighted for vaccination hesitancy in the studied population: personal/family experience with vaccines, beliefs, attitudes about health and prevention, risk/benefit, immunization as not necessary, information from health professionals, and availability of the vaccine.

The definition of the sample stands out as a limiting factor in this research, since the determinants of vaccination hesitancy may vary according to the individual's cultural, socio-environmental, and demographic context, with the data presented being characteristic of the reality of a portion of the population in the extreme south of the city of São Paulo.

A total of 94.5% of the interviewed population said they know what vaccines are and 73.7% related them to disease prevention and immunization. However, when asked about their knowledge of other protection methods, 46% said they know and practice them. In comparison with these data, in the work performed by Viegas et al¹⁶, 77.6% stated they had knowledge about what a vaccine is and what it is for.

The most cited protection alternatives include: hygiene, daily care, healthy lifestyle, use of medicines, periodic medical consultations, homeopathy, intake of natural teas, vitamins, and supplements, and even religious beliefs. Although these behaviors are important for the maintenance of immunity, quality of life, and mental health, they are not effective in the prophylaxis of preventable diseases, and should not, under any circumstances, replace adherence to vaccination²⁸.

Regarding knowledge about the main vaccines made available by the UHS, although the best-known vaccines are against measles and yellow fever, the VC rate presented by the population studied is still low when compared to the goal of the Ministry of Health^{8,13}.

The more knowledge the population has about diseases and vaccines, the better the VC and the less the effect of false news. This was shown in the study by Lobão et

al²⁹, in which parents who refused to vaccinate their children against HPV had less knowledge about the disease and, consequently, did not understand the importance of the vaccine. Furthermore, Viegas et al¹⁶ concluded that the lack of knowledge about vaccines and communicable and vaccine-preventable diseases is one of the main causes of low VC among adolescents.

Still on the knowledge about vaccines, Mizuta et al³⁰ showed that not even doctors and medical students are fully aware of vaccine-preventable diseases in the national vaccine calendar. This is extremely worrying, since health professionals are fundamental in health communication with the population, having great relevance in the goal of VC.

Currently in Brazil, the history of individual vaccination is recorded, mostly, on the card of each citizen³¹. In the current study, it was observed that 75% of those who do not have a vaccination card reported its loss as the main reason. This fact compromises the effectiveness of the immunization control, in addition to promoting an unnecessary expense of revaccination, since, when there is loss of the portfolio, the individual needs to be revaccinated, even if they are immune³².

In 2018, analyzing the question of weakening vaccines for Yellow Fever and the quickly transmitted false news, the Ministry of Health started its project "Health without Fake News". This constitutes a channel on WhatsApp for citizens to forward any information and/or rumors they receive and, after analysis by a technical team, feedback is given on the veracity of the matter¹⁸. This solution was in line with a study carried out by the Chamber of Deputies and the Senate, in which WhatsApp presents itself as the main source of information³³. Despite the fact that the target population of this study does not have social media as its main source of information, but television/radio, there was a positive response in the VC of the yellow fever vaccine (81.4%) compared to measles

(52%). Despite being a relatively small sample, this demonstrates the effectiveness of health communication projects in the 2018 and 2019 campaigns against Yellow Fever. Thus, the same investment in Measles Vaccination Campaigns would be interesting. Viegas et al¹⁶ highlights in their work that the greater knowledge of the yellow fever vaccine, compared to other vaccines, is justified by the fact that it was widely disseminated and discussed in the media.

Furthermore, as stated by Sacramento et al¹⁸, the information consumed by the public nowadays, and reproduced by it, passes through the maintenance of its convictions, that is, it is based on a feeling of identification of values, beliefs, culture, and syntax and not on the hierarchy previously brought by traditional journalism, in which the Brazilian population was only in the position of spectator. This fact is combined with the lack of trust in science producers and complacency, generating a series of complex behaviors and resulting in the lowest vaccination coverage ever seen^{18,34}. Thus also highlights the importance of health professionals to clarify doubts and improve the dialogue with the population, being facilitators of scientific disclosures, and acting directly in health communication.

Conclusion

It was found that the population studied is aware of what vaccines are and what they are for. The most cited were against measles and against yellow fever, as these vaccines are more widely exposed in the media, even though they did not reach the goal proposed by the Ministry of Health. The main variables found for this vaccine hesitancy were: non-reliability, mainly related to fear of adverse events that, although infrequent and not serious, are highly disseminated through false news in the media; the population's low perception of the importance of vaccination, proving

the importance of health communication to mitigate this item; and, finally, the ease of

access to vaccines and the appeal from health professionals.

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