


VACCINATION OF PATIENTS IN A NEIGHBORHOOD OF FORTALEZA: A SURVEY STUDY

 <https://doi.org/10.56238/sevened2024.028-011>

Ana Beatriz Ramalho Leite Silva¹, Maria Beatriz Bezerra Pereira², Nicole Lauren Ramos Nobre³, Theo Marcílio Pompeu⁴ and Jocileide Sales Campos⁵

ABSTRACT

The history of vaccination begins in the eighteenth century, when the first vaccine was developed in the context of smallpox, by Edward Jenner, who demonstrated that by inoculating a contaminated person's secretion into a healthy one, he acquired immunity to the disease, and through these experiments, the first vaccine emerged. . In Brazil, in the twentieth century, Rio de Janeiro faced several epidemics, such as smallpox, plague and yellow fever. As a result, the physician Oswaldo Cruz, in 1904, to combat them, implemented several sanitary measures, among them, the mandatory nature of vaccination. Such an attitude unleashed enormous popular discontent, which became known as the "Vaccine Revolt", in which the population held several protests in the streets, as well as direct combat with armed force, which generated numerous deaths. However, even with several movements against it, it is undeniable that vaccination was one of the most successful public health interventions for the eradication of several diseases. Thus, the objective of this study is to analyze the vaccination coverage of a region of Fortaleza, the knowledge and popular beliefs about this practice, to investigate the main barriers that hinder vaccination, to assess whether the public measures implemented are sufficient to meet the vaccination goal.

Keywords: Vaccination. Vaccine Revolt. Covid-19. Vaccination Calendar.

¹ Incomplete higher education (is in Graduation)
Unichristus

² Incomplete higher education (is in Graduation)
Unichristus

³ Incomplete higher education (is in Graduation)
Unichristus

⁴ Complete higher education
Unichristus

⁵ Complete higher education
Federal University of Ceará



INTRODUCTION

The history of vaccination begins in the eighteenth century, when the first vaccine was developed in the context of smallpox, by Edward Jenner, who demonstrated that by inoculating a contaminated person's secretion into a healthy person, he acquired immunity to the disease, and through these experiments, the first vaccine emerged (KAYSER, 2023; OLIVEIRA *et al*, 2023); PROTKIN, 2023). In this context, this experiment worked as a precursor to the creation of several other vaccines, which contribute to the reduction of the prevalence and morbidity and mortality of numerous diseases worldwide (KAYSER, 2023; OLIVEIRA *et al*, 2023).

However, the topic of "vaccination" has always been controversial, and proof of this are the various anti-vaccine movements that have emerged during all these years since its creation, the first of which was in 1953, in England, with the creation of the first anti-vaccination league in London (OLIVEIRA *et al*, 2023).

In Brazil, in the twentieth century, Rio de Janeiro faced several epidemics, such as smallpox, plague, and yellow fever (PORTO, 2023). As a result, physician Oswaldo Cruz, in 1904, in order to combat them, implemented several sanitary measures, including mandatory vaccination ((CRESCÊNDIO, 2023; SATO 2023; PORTO, 2023). This attitude triggered enormous popular discontent, which became known as the "Vaccine Revolt", in which the population held several protests in the streets, as well as direct combat with armed force, which generated numerous deaths (CRESCÊNDIO, 2023; SATO, 2023; PORTO, 2023)

However, even with several movements against it, it is undeniable that vaccination was one of the most successful public health interventions for the eradication of several diseases (SATO, 2023). An example of this is the number of deaths that was reduced in traditional vaccine-preventable diseases, such as measles, neonatal tetanus, and pertussis, in which there was a reduction from 705,487 deaths in 2000 to 165,770 in 2015 (RESTREPO-MENDEZ *et al*, 2023).

In addition, the World Health Organization (WHO) estimates that the vaccines currently available prevent 2 to 3 million deaths per year globally (KAYSER, 2023). In this context, some programs were created to encourage mass vaccination, including the Expanded Immunization Program (PAI), created by the WHO in 1947, which expanded access to vaccination, which reflected in an increase in vaccination coverage against Diphtheria-Tetanus and Pertussis (DTP) (SATO, 2023). Brazil's National Immunization Program (PNI), in turn, promotes the vaccination of more than 15 antigens free of charge (SATO, 2023).



Regarding vaccination coverage in children, in 1990, it was 95% (SATO, 2023). However, since 2016, there has been a significant drop in this number, as well as an increase in infant mortality (SATO, 2023). Statistics also show that, in the states of Ceará and Pernambuco, 1,310 cases of measles were registered between 2013 and 2015, in addition to the resurgence of this epidemic in 2018 in the states of Roraima and Amazonas, with 1,500 new cases, which draws attention to a possible decrease in vaccination coverage in Brazil and in the world (SATO, 2023). This scenario is due to several factors, including the weakening of the Unified Health System (SUS) with regard to public policies for engaging the population, social and cultural divergences, and misinformation and fake news on the internet (SATO 2023).

With regard to misinformation and false information, it is believed that a large part of the current anti-vaccine movements are due to this (SATO 2023). With this, vaccine hesitancy also originates, defined when there is refusal or delay in the vaccination process, even though they are available in the health system (SATO 2023)

. In the Coronavirus (COVID-19) pandemic, for example, this was widely observed, largely due to the speed of production of new vaccines, amid the fear of the unknown of the disease, as well as the serious adverse effects that emerged through vaccines, including anaphylaxis and thrombocytopenia syndrome (KAYSER, 2023).

Finally, the present study aims to analyze the vaccination coverage of a region of Fortaleza, the knowledge and popular beliefs about this practice, to investigate the main barriers that hinder vaccination, in order to evaluate whether the public measures implemented are sufficient to meet the vaccination goal.

METHODOLOGY

After being published on Plataforma Brasil, then approved by the Ethics Committee of the Christus University Center (Unichristus) and by the Municipal Health Department of Fortaleza, on behalf of the Coordination of Studies, Research and Special Projects (COEPP), the present study was initiated in a basic health unit in the city of Fortaleza.

Initially, questionnaires were applied to patients at UBS Pio XII, using a type of non-probabilistic convenience sample, which aim to investigate the relationship that patients currently have with vaccination. In addition, through these questionnaires, it is intended to assess whether, in that region, the actions of the public authorities are sufficient in publicizing immunization programs, and also to understand whether in the context of the COVID-19 pandemic, there was any resistance from patients to the booster doses of the new vaccine, as well as whether it interfered with the rest of the vaccines. All of this served

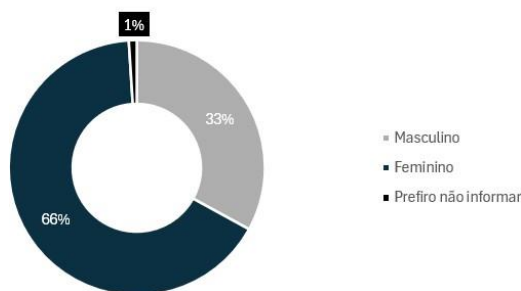
as a source of data for the elaboration of the scientific research in question. For this, the Epi info application, version 7.2.5, was used and the significant value of the sample was calculated, being N=93.

RESULTS

PROFILE OF THE STUDY PARTICIPANTS

People in the waiting room of the Pius XXII Basic Health Unit were interviewed, who were initially categorized as gender (Figure 1), 66% female (n=62), 33% male (n=31) and 1% chose not to inform their gender (n=1). In addition, the participants were classified according to age group, and the following were found: 4 people under 18 years of age, 44 people between 18 and 59 years of age, 27 people aged 60 years or older, and 19 people preferred not to inform their age (Figure 2).

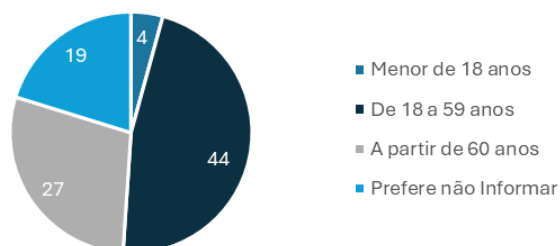
Figure 1 - Sex of the interviewees
Sexo



Source: developed by the author.

Figure 2 - Age group of the interviewees

Faixa Etária dos Entrevistados

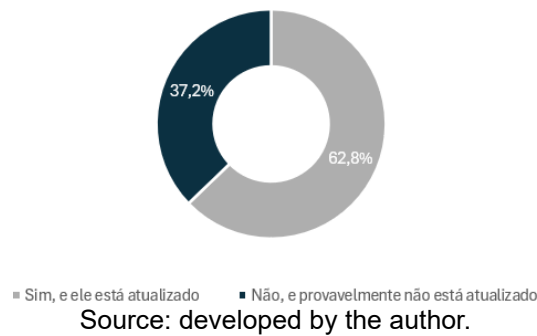


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FACTORS ABOUT THE VACCINATION SCHEDULE:

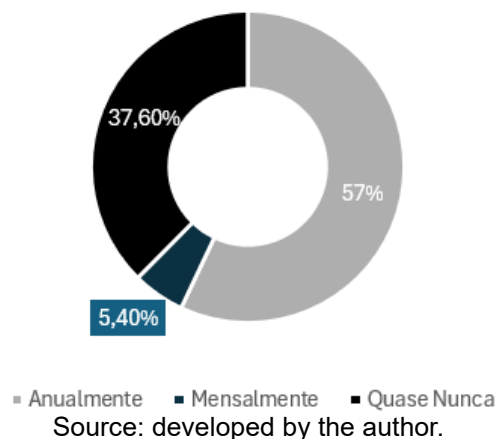
The participants were asked about their knowledge about the status of their vaccination schedule. In this aspect, most of the interviewees stated that they have knowledge and that it is up to date (62.8%), while 37.2% reported not having knowledge about the status and/or that it is probably not up to date (Figure 3).

Figure 3- Status of the vaccination schedule
Status do calendário vacinal



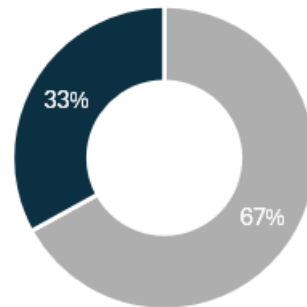
In addition, the present study investigated the frequency with which the population updates their vaccines. This response was categorized as: annually (57%); almost never (37.6%) and monthly (5.4%) (Figure 4).

Figure 4- Frequency of updating the vaccination schedule
Frequência de atualização das vacinas



In addition, the participants' perception of what prevents more frequent vaccination to keep the vaccination schedule up to date was questioned. Among the answers obtained are: lack of information and encouragement by health professionals about the vaccines they need to take, lack of interest, lack of time to go to the Basic Health Unit, lack of a specific vaccination schedule for the elderly population, distrust about efficacy, fear of possible adverse reactions, etc. Another point investigated was the perception of public measures to encourage vaccination in the neighborhood, whether they are sufficient or not. In this regard, 67% of the answers "are sufficient" and 33% of "insufficient" answers were obtained (Figure 5).

Figure 5- Opinion on public measures to encourage vaccination
 As medidas públicas de estímulo
 à vacinação são suficientes?



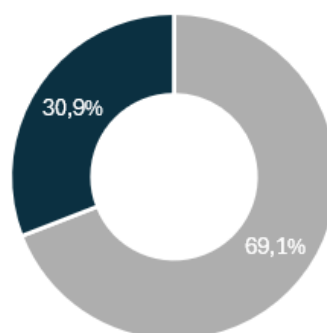
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Source: developed by the author.

Still on this aspect, he was asked about what could be improved, among the answers are: more campaigns in Basic Health Units, in schools and on television, in addition to encouragement by health professionals in routine consultations to clarify the importance of vaccination and stimulate the population.

Also on this aspect, it was asked if their family members usually get vaccinated frequently, most of the interviewees (69.1%) answered yes, while 30.9% answered no (Figure 6).

Figure 6 - Frequency of vaccination of family members
 Os seus familiares costumam se vacinar?



■ Sim ■ Não

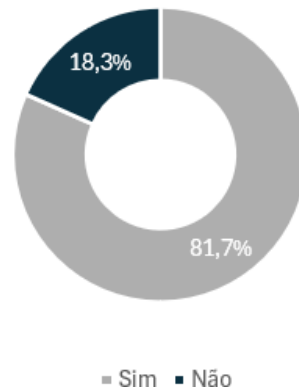
Source: developed by the author.

VACCINATION IN THE CONTEXT OF THE COVID-19 PANDEMIC

Another aspect addressed in this study was about the Covid-19 Pandemic X Vaccination. In this context, it was asked whether the participants kept the vaccination schedule up to date during the pandemic. The majority (81.7%) answered that they kept it,

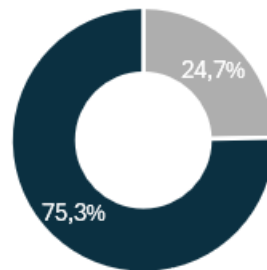
while 18.3% did not (Figure 7). In addition, another question asked was about the resistance in relation to taking multiple doses of the vaccine against Covid-19, which resulted in 75.5% believing that all doses are important, while 24.7% believe that so many doses of vaccine for the same disease are unnecessary (Figure 8).

Figure 7- Vaccination schedule during the Covid-19 pandemic
 Calendário vacinal atualizado durante
 a pandemia pelo Covid-19



Source: developed by the author.

Figure 8- Resistance to multiple doses of the vaccine against Covid-19
 Considerou doses de vacina em excesso
 no contexto da Covid-19?

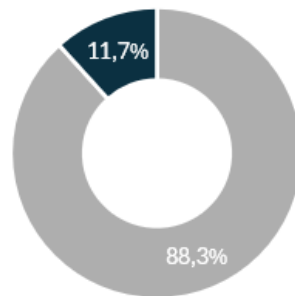


Source: developed by the author.

VACCINE X ILLNESS

In addition, it was asked if the participants believe that vaccines are capable of preventing illness. Regarding this question, most of the interviewees (88.3%) answered yes, while 11.7% answered no (Figure 9).

Figure 9- Belief about the effectiveness of vaccination
 Acredita que as vacinas são capazes de evitar o adoecimento?



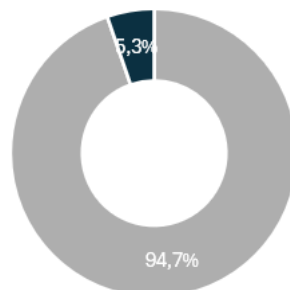
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CHILDHOOD VACCINATION

In addition, this study sought to identify the population's perception of childhood vaccination. For this, the importance of vaccinating children was asked, this question obtained 94.7% of positive answers and only 5.3% negative (Figure 10).

Figure 10 - Perception of childhood vaccination
 Acredita ser importante vacinar as crianças?



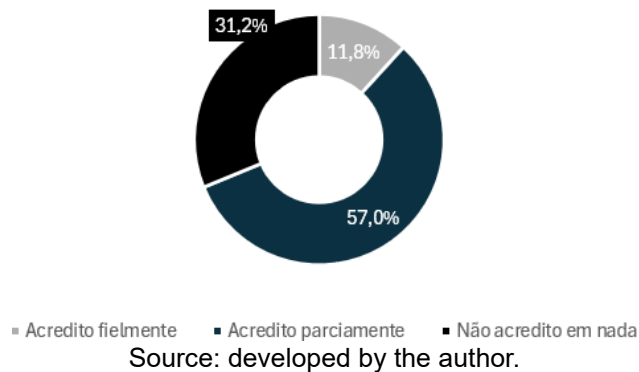
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VACCINE X SOCIAL MEDIA:

People's beliefs about the aspects disclosed on the internet about vaccines were investigated, which was categorized into 3 responses (Figure 11): I believe faithfully (11.8%), I partially believe (57%) and I don't believe in anything (31.2%).

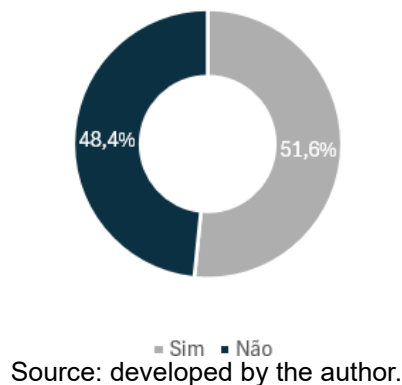
Figure 11- Belief about aspects of vaccination reported in the media
 Acredita nas notícias sobre a
 vacinação divulgadas nas mídias?



VACCINES WITH MULTIPLE DOSES

Another point asked to the participants was whether they understand why some vaccines have multiple doses. In this aspect, more than half of the participants (51.6%) did not understand and 48.4% answered that they understand (Figure 12).

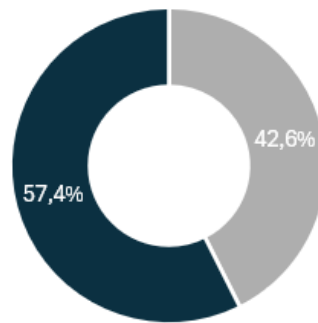
Figure 12- Understanding of multiple doses of certain vaccines
 Você entende o motivo de algumas
 vacinas terem múltiplas doses?



VACCINES X ADVERSE REACTIONS

Finally, the interviewees were asked about the existence of fear of the vaccine causing any adverse reaction. Regarding this aspect, the following result was obtained: 57.4% answered that they are not afraid and 42.6% answered that they are afraid of possible adverse reactions (Figure 13).

Figure 13- Questioning about the fear of vaccines causing adverse reactions
 Você tem medo da vacina causar
 alguma reação adversa?



■ Sim ■ Não

Source: developed by the author.

DISCUSSION

In this context, in addition to many individuals in the region of São João do Tauape having effective prior knowledge about vaccination, many of them have important and essential opinions and positions for transmitting information and deconstructing barriers that may prevent many people from making such a decision of great significance for the health and life of any citizen.

In view of this research and the results evidenced, the essentiality that vaccines have in protecting health and preventing vaccine-preventable diseases, especially during childhood, is indisputably known. Through them, sequelae such as physical disabilities and also thousands of deaths are avoided. Vaccination is included as one of the best public health intervention measures, present worldwide, and undoubtedly represents one of the great advances in medical technology in recent decades. (CARVALHO, 2015)

The study showed that a large part of the population of the neighborhood studied (62.8%) is aware of their vaccination schedule, as well as keeps it up to date. However, a significant portion of the population (33%) still believes that there is a lack of incentives for vaccination, and opined that they could have more information, dissemination and campaigns. Regarding the purpose of vaccination, as in the present study, most parents are aware of the importance of vaccination and vaccinating their children, as well as the ability of the vaccine to prevent diseases.

Vaccination is considered an action of social responsibility that not only protects those who receive the vaccine, but also those who cannot be vaccinated for health reasons, being essential to preserve public health, epidemic control, in addition to promoting the promotion of public health, this act is essential for, mainly, the prevention of various



infectious diseases, aiding herd immunity, and thus considerably reducing the spread of diseases in entire communities. (KRAUSE, 2023)

For Nascimento (2023), it is highlighted that the right to vaccination is among the list of rights linked to health, aiming at its performance in the prevention of illnesses and deaths. Therefore, vaccines are intended to protect human beings: they "teach" the immune system to fight viruses and bacteria that challenge public health. Yellow fever, polio, flu, measles, rubella, rotavirus, pertussis, meningitis, tuberculosis and hepatitis are targets of the Brazilian vaccination calendar, with free immunization offered by the Unified Health System (SUS). (BIRTH, 2023)

For Vilanova (2020), vaccines offer lifelong protection, as vaccines have as their main target to generate immunity for the individual, through the stimulation of the adaptive immune system that, with B lymphocytes, generate specific antibodies or through cellular mechanisms, mediated by other leukocyte cells. This is due to the fact that vaccines have killed or weakened versions of viruses and bacteria and once antibodies are produced in responses to the vaccine, they become a permanent part of your body's immune system (VILANOVA, 2020).

In the following work: "How to interpret the benefits of Covid vaccines", by the author Nadanovsky (2021), he stated that with the arrival of vaccines, there was great tranquility around the world, as they were of fundamental importance to stop the pandemic in a short time, since the pandemic came due to the fact that the Covid virus was unknown and no one had contact with it, but with mass vaccination, there was contact with the virus through vaccination, which caused immunity for vaccinated individuals (NADANOVSKY, 2021).

In this context, Lourenço et al. (2020), explain that there are many types of vaccines, but they all have the same objective, to generate specific immunity through antibodies and cellular mechanisms. But it is important to note that they have different immunization times, so it is necessary to reinforce these vaccines to maintain protection throughout their personal life (LOURENÇO, 2023).

In our study, even in the context of the pandemic, 81.7% were able to keep their vaccine card up to date, while 75.3% took all doses because they thought it was important, 24.7% did not take all of them because they thought it was unnecessary to have several doses of the same vaccine. Regarding the reason why some vaccines have multiple doses, 51.6% of patients understand such dose amounts, while 48.4% do not.

The various occasions of vaccine hesitancy are evidenced as a collective health problem. Especially when it comes to Covid-19 hesitancy among health professionals, due to the responsibility they should assume in relation to the promotion of vaccination among



the population. Regarding the factors that interfere in the vaccination decision-making process of health professionals, some similarities could be observed between some studies, with regard to the greater trend of vaccine acceptance of male health professionals, with older ages, higher education rates, and married (CARDOSO, 2023).

In the aspect of public policies, the logistics of information and disclosures that are more present about the benefits of vaccines still need to be reviewed and improved in a systematic way, in order to allow a vaccination policy with greater transparency, which includes all phases of supply and dissemination of what is necessary and essential to transmit to society, always establishing strategic actions aimed at the regions (AVORN, 2020).

Finally, it is known that in the context of emergency situations, vaccines are considered vital means, such as in the face of outbreaks, epidemics and pandemics, making it necessary to fortify investment in research, development and distribution of vaccination for the future of society, and should be valued, accessible and widely adopted to ensure a healthier and safer world for future generations (LEIGH, 2022).

FINAL CONSIDERATIONS

Based on the questionnaires applied and the results obtained, it is concluded that vaccination is part of a very broad means of knowledge, attitudes and dissemination. Currently, the majority of the population keeps their vaccination schedule up to date and has a certain knowledge about this subject, however, it is worth emphasizing the importance of fortifying information about the objectives of vaccines, about which ones need more than one dose, in addition to establishing conversations regarding the adverse effects that a large percentage of individuals have questioning those present in the vaccination context.



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