Revista ARACÊ
ISSN: 2358-2472

CHILDHOOD VACCINATION: BEHAVIORAL AND SOCIAL FACTORS FROM THE PERSPECTIVE OF CAREGIVERS

https://doi.org/10.56238/arev7n4-193

Submitted on: 03/17/2025 **Publication date:** 04/17/2025

Taynara Augusta Fernandes[1], Anny Beatriz Ferreira de Jesuz[2], Lucas Nordhoff Barcelos Cunha[3], Náthaly Segger Ferreira Barros[4], Luana dos Santos Tavares[5], João Pedro Dias Queiroz[6], Camila Beatriz Cressoni[7] and Marcus Vinicius Moreira Barbosa[8]

ABSTRACT

Delay in acceptance or refusal of vaccination despite the availability of vaccination services are defining factors in vaccine hesitancy. In this context, the study aims to evaluate the behavioral and social factors associated with adherence to childhood vaccines from the perspective of caregivers. This is an observational, analytical, cross-sectional epidemiological study, with a qualitative-quantitative approach, targeting the legal

[1]Master in Biodiversity, Ecology and Conservation
University of Gurupi
Email: taynara.a.fernandes@unirg.edu.br
ORCID: https://orcid.org/0000-0003-0028-8203
LATTES: http://lattes.cnpq.br/5074691129338244
[2]Medical student University of Gurupi
E-mail: anny.b.f.jesus@unirg.edu.br
ORCID: https://orcid.org/0009-0000-6033-7455
LATTES: http://lattes.cnpq.br/4538369395814408
[3]Medical Student University of Gurupi
E-mail: lucas.n.b.cunha@unirg.edu.br
ORCID: https://orcid.org/0009-0003-5826-6864
LATTES: http://lattes.cnpq.br/6359506864105097
[4]Medical student University of Gurupi
E-mail: nathalysbarros@gmail.com
ORCID: https://orcid.org/0009-0000-6788-3635
LATTES: http://lattes.cnpq.br/3052043281564254
[5]Medical student University of Gurupi
E-mail: tavaresluanaa2020@gmail.com
ORCID: https://orcid.org/0009-0002-7081-7422
LATTES: http://lattes.cnpq.br/3143185513362847
[6]Medical Student University of Gurupi
E-mail: diasqueiroz2022@gmail.com
ORCID: https://orcid.org/0000-0002-1606-8363
LATTES: http://lattes.cnpq.br/9046670934566955
[7]Postgraduate in Clinical Pharmacy and Pharmaceutical Prescription
University of Gurupi
E-mail: camilacressoni@hotmail.com
ORCID: https://orcid.org/0009-0002-9479-3322
LATTES: http://lattes.cnpq.br/0900851235564765
[8]Dr. in Biodiversity and Biotechnology
University of Gurupi
Email: marcus.v.m.barbosa@unirg.edu.br
ORCID: https://orcid.org/0000-0001-5015-2254
LATTES: http://lattes.cnpq.br/0228228701001964

Revista ARACÊ
ISSN: 2358-2472

guardians of students enrolled in elementary school (from 1st to 9th grade) in the city of Paraíso do Tocantins. A data survey was carried out through the application of a questionnaire to the parents/guardians, regarding the behavioral and social factors associated with adherence to vaccines. The data obtained were entered into Excel®, where a descriptive analysis was carried out through measures of central tendency, counts and percentages. It was noted that vaccine non-adherence is influenced by factors such as misinformation, cultural resistance, communication failures and access to vaccines. It is clear that adherence to vaccination faces several challenges. Thus, it is crucial to develop effective communication and education strategies, in addition to researching the impact of policies, campaigns, and regional barriers to improve vaccination adherence and protect public health.

Keywords: Refusal of vaccination. Vaccine hesitancy. Disinformation.

Revista ARACÊ
ISSN: 2358-2472

INTRODUCTION

Vaccines are suspensions of attenuated, dead, or inactive live microorganisms, respective fractions or particles of proteins, polysaccharides, or nucleic acids of pathogens, which, when administered, are distributed in the immune system and induce a specific response that inactivates, destroys, or suppresses the pathogen, preventing the disease against which it is directed (González et al., 2022). When it comes to public health prevention measures for children in the global context, vaccination is considered the second most efficient intervention in reducing morbidity and mortality in the population, behind only basic sanitation and drinking water (Leite, 2021; Drutz; Boom, 2025). Thus, vaccination stands out as a fundamental strategy for children's health, contributing significantly to the reduction of vaccine-preventable diseases.

In addition, vaccines also indirectly benefit non-immunized people through community immunity, which occurs when the portion of the population that is immune to infection is large enough to decrease the risk of transmission. Community immunity protects children who are too young for immunization and people with contraindications to vaccines (Drutz; Boom, 2025). Thus, the vaccine is one of the most impactful interventions to reduce morbidity and mortality (Neufeld, 2021). Therefore, immunization should be understood as a modifier in the course of diseases, since it presents a marked decrease in morbidity and mortality caused by infectious diseases preventable by vaccination (Muñoz-Cruzado, 2020). Therefore, the importance of adherence to the complete vaccination schedule is evident, benefiting both social well-being and the protection of collective and individual health.

Childhood immunization programs have had a dramatic impact on child morbidity and mortality worldwide. In Latin America and the Caribbean, nearly 174,000 deaths were prevented through the vaccination of children under 5 years of age between 2006 and 2011, according to estimates by the Pan American Health Organization (PAHO) (Etienne, 2017). Although the Brazilian National Immunization Program (PNI) is one of the largest vaccination programs in the world, it currently faces high rates of abandonment in childhood vaccination (Moura et al., 2024). Thus, it is crucial to understand the reasons for the decrease in adherence to vaccines and to ensure the continuity of the advances made in child health.

Delay in the acceptance or refusal of vaccination, despite the availability of vaccination services, are factors that define vaccine hesitancy (Boom; Healy, 2024). In this

Revista ARACÊ
ISSN: 2358-2472

context, a working group set out to identify the behavioral and social factors (CSFs) associated with adherence to childhood vaccines, developing standardized tools for use in all countries and scenarios (WHO, 2021). The framework is composed of four dimensions of FCS associated with vaccination: thoughts and feelings (people's cognitive and emotional responses to vaccine-preventable diseases and vaccines); social processes (social norms on vaccination and the receipt of vaccination recommendations); motivation (people's intention, willingness and hesitancy to take vaccines); and practical issues (experiences people have when trying to take vaccines, including the barriers they face) (PAHO, 2022). In summary, the identification of FCS associated with vaccination is essential to understand and address barriers to vaccine adherence, allowing the development of effective strategies to promote immunization.

Furthermore, lack of immunization can result in outbreaks of vaccine-preventable diseases and put children at risk of serious complications and even death, vaccination adherence still faces significant challenges, especially in countries with large social and economic inequalities, such as Brazil (Almeida et al., 2024). It is of great importance to detect areas with low coverage and high rate of vaccine abandonment, which can serve as a warning for the planning of specific strategies aimed at reducing the vulnerability of these areas (Moura et al., 2024). In view of this, the objective of this article is to evaluate the behavioral and social factors associated with adherence to childhood vaccines from the perspective of caregivers.

METHODOLOGY

The research is characterized as an observational, analytical, cross-sectional study, with a qualitative-quantitative approach. A data survey was carried out through the application of a questionnaire to the legal guardians of the child enrolled in elementary school, regarding the behavioral and social factors (FCS) associated with adherence to childhood vaccines. It is evident that the World Health Organization (WHO) recommends that countries systematically collect and analyze FCS data on vaccine adherence.

The target audience is those responsible for the legal rights of students enrolled in elementary school (from 1st to 9th grade), municipal and state public schools and private schools in the municipality of Paraíso do Tocantins. Therefore, the study population is 7,174 enrolled in elementary school in 2023 in that municipality (IBGE, 2023), and the sample is based on a confidence level of 95% and a margin of error of 5%, totaling 238

Revista ARACÊ
ISSN: 2358-2472

participants. These were approached at the beginning or at the end of the parent-teacher meetings of the schools, invited to participate in the research and then taken to a reserved room where the Informed Consent Form (ICF) was presented, later signed in two copies, one copy was delivered to the respondent and only then did the participants have access to the questionnaire. After answering the questionnaire, the participant himself deposited it in a sealed box that was available in the room.

The questionnaire structure included measurable, potentially modifiable, and vaccination-specific influences. The four dimensions of CSF associated with vaccination were considered: thoughts and feelings (construct trust in the benefits of the vaccine, differences between vaccines from the public and private network, perception of the risk of not vaccinating, and perception of the risk of vaccinating); social processes (construct, circulation, and credibility in fake news); motivation (construct intention, obligation, and refusal to take the vaccines); and practical issues (construct, availability and economic viability). After the application of the questionnaires, the data obtained during the field research were entered into the Microsoft Excel® spreadsheet software, where a descriptive and statistical analysis was carried out through measures of central tendency, counts, percentages.

In the present study, all the ethical principles stipulated in the Declaration of Helsinki of the World Medical Association were followed, including its revisions in 1964, 1975, 1983, 1989, 1996, 2000 and 2008. The study also observed the specific legislation applicable to the country where the research was carried out. The research was submitted to and approved by the Research Ethics Committee (CEP) of the University of Gurupi, according to CAAE protocol no. 67259323.1.0000.5518, in accordance with local ethical requirements and was approved by opinion no. 5.914.293.

RESULTS

The research reached a sample of 238 participants, who were asked about FCS related to vaccination. Regarding the dimension thoughts and feelings, I construct confidence in the benefits of the vaccine, only 7.3% say they do not believe that vaccines work, issuing several justifications, such as: not all vaccines have proven efficacy, the vaccinated child had the disease and others say that it depends on the vaccine.

As for the differences between the vaccines offered in the public and private network, 3.2% say that the vaccines offered by private clinics are better. On the other hand, 7.3%

Revista ARACÊ
ISSN: 2358-2472

said that the vaccines offered in the public network are better, 88.5% trust both and 1% do not trust any type of vaccine.

Regarding the construct perception of the risks of not vaccinating the child, 64.0% believe that if the child is not vaccinated, there may be greater exposure to diseases; 46.0% report the risk of recurrence of eradicated diseases; 34.0% say that more transmission vectors and new variants of diseases may emerge; 32.0% assert that non-vaccination can cause an increase in other correlated diseases. On the other hand, 3.0% say that there are no consequences for the child and 0.5% believe that there are no consequences for the community of not vaccinating.

Regarding the perception of the risks of vaccinating the child, 24.2% say that the child may get sick because he or she has received doses of vaccines and 19.4% believe that there is some risk in vaccinating the child, such as: side effects and allergies or even getting sick from the disease that the vaccine prevents. At this point, one of the participants stands out mentioning that he believes that vaccines put the child's life at risk, but did not inform whether such risks were associated with allergies or any previous pathology in the child.

In the dimension of social processes, when it comes to the construct circulation and credibility in fake news, such as news about the ineffectiveness of vaccines, that they can cause some type of incurable disease or any information that diminishes their importance as disease prevention, 53.4% of the participants say they have already received this type of news. Among those who received the fake news, 63.4% believe in the information contained and, in addition, 17.0% are disseminators, stating that they share such information with other people to avoid risks associated with the vaccine.

On the other hand, 93.5% stated that the child for whom they are responsible received all the vaccines in the children's calendar, interpreted here as the construct intention to take the vaccine, in the motivation dimension. Another relevant piece of data in this same dimension, the mandatory construct, is that 36.4% of the participants say that the obligation to present the Child's Handbook (vaccination) for school enrollment is a factor that forced them to vaccinate the student. Added to this, another alarming fact is that in the vaccine refusal construct, 11.4% have already refused to vaccinate the child, either because they believe that the vaccine puts the minor's life at risk, or because the child has had allergies or fever, or because they are sick on the date of the vaccine.

Revista ARACÊ
ISSN: 2358-2472

Finally, in the dimension of practical issues, construct availability, 36.0% stated that they had already stopped vaccinating the student due to the unavailability of vaccines in the Unified Health System (SUS), 16.0% had already stopped vaccinating the student due to unavailability of time and/or means of transportation to take the child to vaccinate. In the economic feasibility construct, it was observed that 4.0% of the participants take their dependents to vaccinate only in private clinics. Therefore, most use the service provided by the SUS.

DISCUSSION

Although 93.5% of the participants stated that the child for whom they are responsible received all the vaccines in the children's calendar, the child vaccination coverage recorded by the Ministry of Health in 2023, in Paraíso do Tocantins, ranged from 41.42% for the 2nd dose of the MMR to 93.4% for Pneumo 10 (Brasil, 2024). This demonstrates a great variability in the vaccination coverage of different immunobiologicals in the last year, reaffirming the need for urgent intervention by state and municipal health services. The reason most parents or guardians stated that the child was properly vaccinated is probably due to the lack of information and awareness campaigns aimed at instructing the population about the updated vaccination schedule. Such educational campaigns should be implemented by the National Immunization Program (PNI), which plays an extremely important role for Brazilian society (Sousa et al., 2021; Drutz; Boom, 2025).

In addition, to increase vaccination coverage, it is essential to understand the reasons for vaccine refusal and low adherence of some immunobiologicals. Confidence in the benefits of the vaccine represents an important factor, because when it is low, weakened, or broken, people are hesitant to comply with the vaccination schedule, increasing the risk of spreading vaccine-preventable diseases. In this survey, it was observed that 7.3% of those surveyed do not believe in the effectiveness of the vaccine, but it is essential that the population trusts health professionals, the health system, and the Ministry of Health of their country, so that they follow the guidelines on vaccinations (PAHO, 2023; Drutz; Boom, 2025). Furthermore, regarding trust, Salmon et al. (2024) also highlight that the slowness of science often contributes to the widespread concern of the population and consequent reductions in immunization coverage, as well as in the outbreaks of certain vaccine-preventable diseases and vaccine refusal. Science's answers

Revista ARACÊ
ISSN: 2358-2472

about vaccine safety invariably depend on robust epidemiological evidence, but this takes time, negatively affecting vaccine uptake.

However, it was identified that 88.5% of respondents believe that the vaccines offered in the public and private health systems do not differ in quality. This result highlights that the population trusts the service offered by the public health system, but that it is necessary to guarantee and preserve this trust so that the goals of the immunization programs are achieved. Therefore, it is evident how the PNI is extremely important for Brazilian society, as it has organizations and logistics that allow access to immunizers to the neediest population, which makes the principles of the SUS effective (Sousa et al., 2021; Moraes et al., 2024).

In recent years, some studies have sought to describe the process of adherence to childhood vaccination and its influencing factors, both in Brazil and in the world (Silva et al., 2019; Harry et al., 2023; Souza et al., 2023). These studies conclude that the main reasons for vaccine refusal are: lack of knowledge about vaccines (Silva et al., 2019; Harry et al., 2023; Souza et al., 2023), the fear of adverse reactions from vaccination (Silva et al., 2019; Harry et al., 2023; Souza et al., 2023) and the spread of fake news (Harry et al., 2023; Souza et al., 2023). These notes corroborate the results found here, as more than 24% of the interviewees believe that the child can get sick if vaccinated, another 19% mentioned the side effects of the vaccines, including a mention that the vaccine puts the child's life at risk.

In addition, fake news also featured prominently during the interviews. About 53% of participants stated that they have already received fake news, with more than 63% of these mentioning that they believe in this news conveyed without due scientific rigor. In addition, another 17% stated that in addition to believing these messages, they are disseminators of such misinformation. However, this demonstrates how urgent and necessary it is to plan actions such as vaccination campaigns, lectures in communities and schools, active search for unvaccinated children, review of vaccination cards and the intensification of home visits, with the support of community health agents to mitigate the impacts observed in the country's vaccination coverage.

CONCLUSION

Based on the data collected, it is observed that, although most caregivers claim to have vaccinated the children under their responsibility, significant gaps persist related to

Revista ARACÊ
ISSN: 2358-2472

knowledge, trust, and the influence of false information about immunizers. The presence of misinformation, doubts about the efficacy of vaccines, and practical difficulties such as the unavailability of public health services are barriers to full adherence to the vaccination schedule. These factors reinforce the need for continuous educational strategies, based on scientific evidence, that strengthen confidence in vaccines and health professionals, in addition to more effective actions of access, monitoring, and communication by the public system.

Thus, understanding the behavioral and social factors associated with childhood vaccination, from the perspective of caregivers, is essential for the formulation of more assertive public policies. Investing in campaigns that combat misinformation, promote dialogue, and bring health services closer to the population can be decisive in expanding vaccination coverage and protecting children against vaccine-preventable diseases. The success of the National Immunization Program, in this scenario, will depend directly on strengthening collective trust, equity in access to immunizers, and valuing the role of health professionals as key agents in promoting vaccination.

ACKNOWLEDGMENT

We are grateful for the financial support received by the Foundation for Research Support of Tocantins – FAPT and the Government of the State of Tocantins.

Revista ARACÊ
ISSN: 2358-2472

REFERENCES

1. Almeida, C. de C. S. de, Ribeiro, J. B., Barbosa, T. D., Alves, W. K. da P., & Jaretta, T. M. (2024). O papel do enfermeiro na ampliação da adesão à vacinação infantil: Uma revisão de literatura. Revista JRG de Estudos Acadêmicos, 7(14), Article e141162. https://doi.org/10.51883/revea.v7i14.1162

2. Boom, J. A., & Healy, M. (2024). Standard childhood vaccines: Caregiver hesitancy or refusal. UpToDate. https://www.uptodate.com/contents/standard-childhood-vaccines-caregiver-hesitancy-or-refusal

3. Brasil, Ministério da Saúde, Departamento de Monitoramento, Avaliação e Disseminação de Informações Estratégicas em Saúde, & Secretaria de Informação e Saúde Digital. (2024). Informações sobre a cobertura vacinal. https://infoms.saude.gov.br/extensions/SEIDIGI_DEMAS_VACINACAO_CALENDARIO_NACIONAL_COBERTURA_RESIDENCIA/SEIDIGI_DEMAS_VACINACAO_CALENDARIO_NACIONAL_COBERTURA_RESIDENCIA.html

4. Drutz, J., & Boom, J. (2025). Standard immunizations for children and adolescents: Overview. UpToDate. https://www.uptodate.com/contents/standard-immunizations-for-children-and-adolescents-overview

5. Etienne, C. (2017). Programa Ampliado de Imunização nas Américas: 40 anos. Revista Panamericana de Salud Pública, 41, Article e139. https://doi.org/10.26633/RPSP.2017.139

6. González, F. R., Fernández, R. G., Gómez, M. G., & Sánchez, L. I. (2022). Calendario de vacunas en niños en un centro de atención primaria. Notas de Enfermería, 22(39), 54–63.

7. Herry, A. M., Greaves, D., Smith, P., Toledo, N. A., Wildman, A., Wildman, T., Browne, R., Chen, M., Jones, M., Aymat, S. (2023). Facilitators of and barriers to COVID-19 vaccination in Grenada: A qualitative study. Revista Panamericana de Salud Pública, 47, 1–9. https://doi.org/10.26633/RPSP.2023.88

8. Instituto Brasileiro de Geografia e Estatística. (n.d.). Paraíso do Tocantins: Panorama. https://cidades.ibge.gov.br/brasil/to/paraiso-do-tocantins/panorama

9. Leite, R. S. (2021). Análise da taxa de abandono das vacinas de multidose do Calendário Nacional de Vacinação infantil nos municípios de uma região do estado de São Paulo, Brasil [Master's thesis, Universidade Católica de Santos].

10. Moraes, J. C. de, França, A. P., Guibu, I. A., Barata, R. B., Domingues, C. M. A. S., Teixeira, M. da G., & Grupo ICV 2020. (2024). Cobertura vacinal completa de crianças nascidas em 2017-2018, residentes nas áreas urbanas das capitais e em 12 cidades do interior do Brasil: Inquérito de base populacional baseado em uma coorte retrospectiva. Epidemiologia e Serviços de Saúde, 33(spe2), Article e20231101. https://doi.org/10.1590/S2237-96222024000100002

Revista ARACÊ
ISSN: 2358-2472

11. Moura, L. de L., & Souza-Santos, R. (2024). Heterogeneidade espaço-temporal dos indicadores de imunização da vacina tríplice viral em crianças no Brasil. Revista Panamericana de Salud Pública, 48, Article e34. https://doi.org/10.26633/RPSP.2024.34

12. Muñoz-Cruzado, B. M. (2020). Reflexión ante la vacuna de la COVID-19. Revista Española de Comunicación en Salud, 11(2), 175–177. https://doi.org/10.20318/recs.2020.5708

13. Neufeld, P. M. (2021). Personalities of Health History XII: Edward Jenner and the origin of the vaccines. Revista Brasileira de Análises Clínicas, 53(3), 201–210.

14. Organização Mundial da Saúde. (2021). SAGE Yellow Book for October 2021: Section 2. https://terrance.who.int/mediacentre/data/sage/SAGE_eYB_Oct2021.pdf

15. Organização Pan-Americana da Saúde. (2022). Compreensão dos fatores comportamentais e sociais associados à adesão às vacinas: Documento de posição da OMS – Maio de 2022. Revista Panamericana de Salud Pública, 97, 209–224.

16. Organização Pan-Americana da Saúde. (2023). Boletim de imunização. Programa Especial de Imunização Integrada, 45(3), 1–9.

17. Salmon, D. A., Orenstein, W. A., Plotkin, S. A., & Chen, R. T. (2024). Funding postauthorization vaccine-safety science. New England Journal of Medicine, 391(2), 102–105. https://doi.org/10.1056/NEJMp2403799

18. Silva, L. E. L. da, Oliveira, M. L. C. de, & Galato, D. (2019). Receptividade à vacina contra o papilomavírus humano: Uma revisão sistemática. Revista Panamericana de Salud Pública, 43, 1–9. https://doi.org/10.26633/RPSP.2019.93

19. Sousa, J. C. L. de, Barros, R. J. F. de, Holanda, J. R. C. de, Ferreira, J. B. M., Almeida, A. G. R., Freire, F. B. de M., Brito, S. N. de, Araújo, L. L. de, & Mourão, T. M. (2021). Reflexos e resultados do PNI desde sua implementação até o presente. Científic@ - Multidisciplinary Journal, 8(2), 1–9. https://doi.org/10.29247/2358-260X.2021v8i2.01-09

20. Souza, M. C. C. de, Silva, L. R. da, Santos, D. A. da S., & Goulart, L. S. (2023). Adesão à imunização infantil no Brasil: Uma revisão narrativa. Scientific Electronic Archives, 16(7), 66–70. https://doi.org/10.36560/16720231875