Arch Argent Pediatr. 2026;e202510921

Perception of vaccine myths in daily clinical practice: A survey of healthcare professionals

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ABSTRACT

Introduction. Misinformation is a barrier to immunization. The objective was to describe and categorize vaccine-related myths reported by healthcare professionals (HCPs).

Population and methods. A descriptive, retrospective study was conducted using a survey administered during registration for a vaccine symposium, in which HCPs were invited to identify myths they had encountered in their practice. The open-ended responses were classified into their main categories and themes and synthesized using artificial intelligence.

Results. A total of 679 HCPs responses were recorded; 751 myths were mentioned. Main categories: harm (46.2%), vaccine-specific myths (20.9%), and false contraindications (16.1%). Most frequent topics: "*they cause autism*" (23.0%), "*they are harmful*" (22.5%), "*the flu vaccine causes the flu*" (15.2%).

Conclusion. The main myths were related to harm, and autism remains the most frequent myth. Communication tools are essential for daily practice.

Keywords: *myths; vaccines; healthcare personnel; trust; vaccine refusal.*

doi: http://dx.doi.org/10.5546/aap.2025-10921.eng

To cite: Castellano VE, del Pino M, Diana Menéndez S, Bonvehí P, Fernández F, Burgos F, et al. Perception of vaccine myths in daily clinical practice: A survey of healthcare professionals. *Arch Argent Pediatr.* 2026;e202510921. Online ahead of print 19-FEB-2026.

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Funding*: None.*

Conflict of interest: *None.*

Received*: 10-17-2025*
Accepted*: 12-15-2025*

INTRODUCTION

Misinformation is a barrier to achieving optimal vaccination coverage.[1] The current situation regarding vaccination coverage in Argentina is worrying and is part of a global trend of declining confidence in vaccines, exacerbated by the pandemic, and with no recovery in subsequent years. According to the 4th Report of the Observatory of the Sociedad Argentina de Pediatría, in 2024, only five vaccines achieved coverage above 80%. In particular, coverage declines sharply with booster doses: the pentavalent (DTPHibHB) vaccine dose at 15-18 months reached only 66.8%, and the second MMR dose at 5 years did not exceed 50%. In the context of growing questions about vaccination, identifying and addressing vaccine myths is essential to protect adherence to immunization programs.[2,3]

Healthcare professionals (HCPs) play a key role in vaccine decision-making, particularly pediatricians, who serve as a primary point of reference for family health. However, a questionnaire investigating pediatricians' perceptions of addressing vaccine-related issues found that approximately 20% considered themselves "poorly trained" to address adverse events and contraindications during consultations. Those with more recent training reported higher competence, underscoring the importance of continuing education.[4]

To design effective training and communication interventions for healthcare personnel and the community, it is necessary to identify the myths that most frequently arise in routine clinical practice.

The objective of this study was to describe and categorize vaccine myths reported to HCPs and to develop guidance messages grounded in scientific evidence.

POPULATION AND METHODS

A descriptive, retrospective study was conducted based on a secondary analysis of data from a survey administered for educational purposes during the registration process for the Fundación Vacunar Vaccine Symposium. The symposium registration form collected data on the professionals (profession and specialty for physicians) and an open-ended question inviting them to mention one or more myths about vaccines that they had heard at any time during their professional practice.

Responses about myths were collected in free format. They were then classified by identifying patterns of repetition and grouping the myths into categories based on their main themes (harm, false contraindications, myths specific to certain vaccines, effectiveness, risk perception, cultural myths, pharmaceutical industry, conspiracy theories, and others).

Artificial intelligence-assisted synthesis tools were used to summarize similar themes in representative sentences.

The data were presented as numbers and percentages, ordered by frequency of occurrence, either by category or by theme. In addition, a descriptive analysis was conducted to compare the distribution of myth categories by participants' professions, using the chi-square test. Excel was used as a database, ChatGPT as an artificial intelligence tool, and Stata vs. 14 for the analysis.

Finally, guiding response messages addressing the most frequent myths were developed based on scientific evidence through a rapid review of the literature.

Participation was voluntary and did not condition the event registration process. The results were analyzed anonymously. The protocol was evaluated and approved by the Stamboulian Clinical Research Ethics Committee and was registered with PRIISA (N.° 17140).

RESULTS

A total of 804 HCPs who registered between May 27, 2025, and June 25, 2025, participated. A total of 125 were excluded for not responding to the open-ended question (response rate: 84.5%).

The places of residence were the Autonomous City of Buenos Aires (46.7%; N = 317) and the province of Buenos Aires (35.9%; N = 244); 54.0% (N = 134) corresponded to the Buenos Aires Metropolitan Area; 8.6% (N = 21) to the province's interior; and 36.0% (N = 89) did not specify a municipality. Likewise, 12.1% (N = 82) resided in other provinces; 1.0% (N = 7) in other countries, and 4.3% (N = 29) did not provide information.

Physicians accounted for 72.9% (N = 493); 20.7% (N = 141) were nurses; 1.2% (N = 8) were pharmacists; and 5.4% (N = 37) were other professionals. The main medical specialties are detailed in *Figure 1.*

A total of 751 myths were mentioned; 7 HCPs respondents reported not having heard any of them. The distribution of myth categories are described in *Figure 2.*

Table 1 summarizes and classifies the themes

by their main category.

In the analysis of the distribution of myth categories by profession, significant differences were observed only for cultural myths and for those related to the pharmaceutical industry (p <0.01 in both cases). Among nurses, 10.6% reported at least one cultural myth, compared to 0.6% of physicians, and 5.7% mentioned myths linked to the pharmaceutical industry, compared to 1.6% of physicians. The remaining categories showed a similar relative distribution across both professional groups.

Table 2 describes the guiding response messages for the most frequent topics, and the supplementary material provides additional information, including corresponding references from the literature.

DISCUSSION

This study included a population composed primarily of physicians, more than half of whom were pediatricians, with most participants based in the Buenos Aires Metropolitan Area.

The main myths referred to were grouped into the "damage" category, with particular emphasis on the alleged link to autism spectrum disorders. This myth, widely disseminated since the 1990s on the basis of a fraudulent study, has been refuted by multiple population studies, meta-analyses, and high-quality systematic reviews, which conclusively demonstrate the absence of a causal link.[5-7] Although the original publication was

Figure 1. Medical specialties that reported myths heard in their practice expressed as percentages (N = 493)

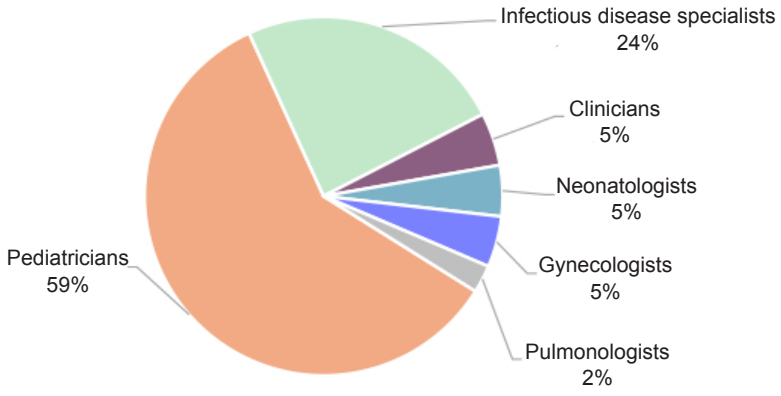
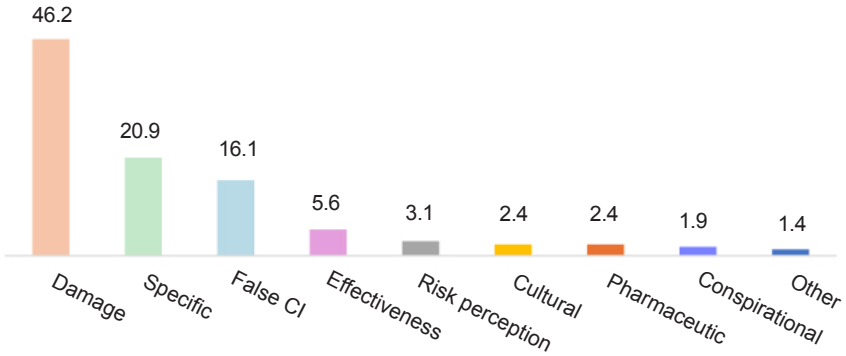


Figure 2. Categories of myths reported by healthcare professionals, expressed as a percentage (N = 751)



CI: contraindications.

Table 1. Myth topics synthesized by artificial intelligence (N = 751)

Myth	N	%	Category
"Vaccines cause autism, ASD, or developmental disorders in children."	173	23.0	**Damage**
"Vaccines make you sick, lower your defenses, and are harmful."	169	22.5	
"Pregnant women should not be vaccinated because vaccines are not safe and can harm the baby."	5	0.7	
"The flu vaccine causes the flu."	114	15.2	**Specific myths about certain vaccines**
"The COVID vaccine is dangerous, causes illness, leaves sequelae, or was not sufficiently tested."	34	4.5	
"The HPV vaccine can cause infertility, cancer, and encourage inappropriate sexual behavior in adolescents."	6	0.8	
Myths about BCG vaccine	3	0.4	
"You cannot be vaccinated if you have a runny nose, a cold, a sore throat, or a fever."	95	12.6	**False contraindications**
"You can't give many vaccines at once; you have to wait between each one or start from scratch if the time has passed."	26	3.5	
"Vaccines don't protect you, they're useless, and you can still get sick."	23	3.1	**Effectiveness**
"It's better to get sick naturally than to get vaccinated, because that way generates better defenses."	13	1.7	
"Vaccines always cause fever; if you don't get a fever, it didn't work."	6	0.8	
"Adults don't need to be vaccinated, and there's no need to be vaccinated if the disease no longer exists."	23	3.1	**Risk perception**
"You should not eat eggs after vaccination. Applying lemon to the injection site *helps in reducing pain or inflammation."*	18	2.4	**Cultural**
"Vaccines are an invention of the pharmaceutical industry to make money. *are part of a business or experiment."*	18	2.4	**Pharmaceutical industry**
"Vaccines implant microchips, contain graphene that is harmful to the body, *or generate magnetism after their application."*	14	1.9	**Conspiracy theories**
Other	11	1.4	

ASD: autistic spectrum disorder; BCG: bacillus Calmette-Guérin; HPV: human papillomavirus.

retracted,[8] the persistence of the myth reflects the impact of misinformation and the need to maintain communication strategies for prevention and crisis management.[9]

"Vaccines make you sick, lower your defenses, and are harmful" was the myth referred to in more than a fifth of the responses. Vaccine safety is evaluated not only in rigorous clinical trials prior to approval but also through continuous surveillance systems once marketed. These systems allow for the detection, analysis, and response to reports of adverse events, particularly serious ones, through risk-benefit assessments that ensure an adequate balance in favor of vaccination.[9-11]

Among the specific beliefs about each vaccine, the influenza vaccine was the most frequently mentioned, with the idea that it "causes the flu". This contrasts with the composition of the most widely used influenza vaccines, which are inactivated, and with the extensive evidence supporting their effectiveness in reducing the global burden of disease, particularly in preventing severe disease and hospitalizations among the most vulnerable groups.[12,13]

Finally, identifying false contraindications, such as mild fever, minor infections, or antibiotic use, underscores the need to reduce missed vaccination opportunities.[14]

Although the analysis identified differences in cultural myths and those linked to the pharmaceutical industry across professions, these categories accounted for a very small number of responses and did not alter the consensus that myths are common and widespread among HCPs.

The role of HCPs in addressing misinformation about vaccines is fundamental, especially in a context of low coverage and growing questioning of their benefits. This reinforces the need to strengthen continuing education to provide a solid response that demonstrates the professional's knowledge and confidence with effective communication techniques.

This study has weaknesses; the myths were reported by the HCPs and constitute an indirect estimate, possibly affected by recall bias.

Table 2. Guidance messages on the most frequently asked questions

Myth	Suggested response*
Vaccines cause autism, ASD, or developmental disorders in children's development."	The myth originated in 1998 from a study published in *The Lancet*, which suggested a link between the MMR vaccine and autism in just 12 patients. The research was retracted due to fraud, conflicts of interest, and ethical violations, and its conclusions could not be replicated. Numerous high quality studies (systematic reviews and meta-analyses involving more than 1.2 million children) have conclusively demonstrated that there is no link between vaccination and autism.
"Vaccines make you sick; they lower your defenses and are harmful."	Scientific evidence indicates that vaccines elicit a specific immune response that strengthens the immune system. There is no immunological or clinical basis for the claim that vaccines "lower defenses." Serious adverse events are extremely rare, and the benefits far outweigh the risks.
"The flu vaccine causes the flu."	The flu vaccine in Argentina is composed of inactivated viruses or purified proteins that are unable to replicate. In clinical trials and post-marketing surveillance, the most common adverse effects are short-lived and occur in fewer than 10% of vaccinated individuals.
"The HPV vaccine can cause infertility, cancer, and encourage inappropriate sexual behavior in adolescents."	Five hundred million doses of HPV vaccines administered worldwide have shown an excellent safety profile, with no apparent association with infertility/ autoimmunity, nor have they been shown to cause behavioral changes.
"You can't administer too many vaccines at once."	Co-administration of multiple vaccines is safe, and the human immune system can respond to thousands of antigens simultaneously without being compromised.
"Vaccines do not protect, they are useless, and you can still get sick."	Routine immunization is safe, effective, and recommended by all scientific societies; it is the primary means of preventing infectious diseases and cancer.

**Bibliographic references are available in supplementary material.*
ASD: autistic spectrum disorder; MMR: measles, mumps, and rubella; HPV: human papillomavirus.

Furthermore, because the survey was conducted during a vaccine symposium, the sample likely includes professionals with a greater interest in immunizations, which limits the generalizability of the findings. However, these exploratory findings enabled us to identify common myths that inform the development of tools for professional practice, grounded in scientific evidence.

CONCLUSION

The main myths were related to "harm"; autism remains the most common myth among them. The flu vaccine was the most frequently mentioned in its category. False contraindications were identified in third place. Strengthening continuing education and providing communication tools are essential for the daily practice of healthcare personnel. ■

Acknowledgments

To registered nurses Nadia Sosa and Andreína Verdi, who, together with nurse Jésica Vera, collaborated on this article.

To all the professionals who contributed their expertise in responding to the assignment.

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