

Carolina Luísa Alves Barbieri<sup>1</sup>Márcia Thereza Couto<sup>II</sup>

# Decision-making on childhood vaccination by highly educated parents

## Vacinação infantil e tomada de decisão por pais de alta escolaridade

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### ABSTRACT

**OBJECTIVE:** To analyze the sociocultural aspects involved in the decision-making process of vaccination in upper-class and highly educated families.

**METHODS:** A qualitative approach based on in-depth interviews with 15 couples from the city of Sao Paulo, Southeastern Brazil, falling into three categories: vaccinators, late or selective vaccinators, and nonvaccinators. The interpretation of produced empirical material was performed through content analysis.

**RESULTS:** The study showed diverse and particular aspects surrounding the three groups' decisions whether to vaccinate their children. The vaccinators' decision to vaccinate their children was spontaneous and raised no questions. Most late or selective vaccinators experienced a wide range of situations that were instrumental in the decision to delay or not apply certain vaccines. The nonvaccinator's decision-making process expressed a broader context of both criticism of hegemonic obstetric practices in Brazil and access to information transmitted via social networks and the internet. The data showed that the problematization of vaccines (culminating in the decision to not vaccinate their children) occurred in the context of humanized birth, was protagonized by women and was greatly influenced by health information from the internet.

**CONCLUSIONS:** Sociocultural aspects of the singular Brazilian context and the contemporary society were involved in the decision-making on children's vaccination. Understanding this process can provide a real basis for a deeper reflection on health and immunization practices in Brazil in light of the new contexts and challenges of the world today.

**DESCRIPTORS:** Child Health. Immunization Programs. Parents. Socioeconomic Factors. Qualitative Research.

<sup>1</sup> Programa de Pós-Graduação em Saúde Coletiva. Centro de Ciências Sociais Aplicadas e Saúde. Universidade Católica de Santos. Santos, SP, Brasil

<sup>II</sup> Departamento de Medicina Preventiva. Faculdade de Medicina da Universidade de São Paulo. São Paulo, SP, Brasil

#### Correspondence:

Carolina Luísa Alves Barbieri  
Av. Conselheiro Nébias, 300 Vila Mathias  
11015-002 Santos, SP, Brasil  
E-mail: calubarbieri@gmail.com

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## RESUMO

**OBJETIVO:** Analisar os aspectos socioculturais envolvidos no processo de tomada de decisão da vacinação em famílias de alta renda e escolaridade.

**MÉTODOS:** Abordagem qualitativa, com uso de técnica de entrevista em profundidade, realizada com 15 casais residentes na cidade de São Paulo, SP, alocados em três grupos: vacinadores, vacinadores tardios ou seletivos e não vacinadores. O percurso analítico-interpretativo do material empírico foi realizado por meio da análise de conteúdo.

**RESULTADOS:** O estudo encontrou diversidades e particularidades frente à decisão de (não) vacinação infantil nos três grupos. Nos casais vacinadores, a decisão em vacinar os filhos apresentou-se sem questionamentos. A maioria dos vacinadores tardios ou seletivos vivenciaram diferentes situações que foram determinantes para a decisão de postergar ou excluir algumas vacinas. O processo de decisão nos casais não-vacinadores foi expresso num contexto mais amplo envolvendo a crítica às práticas obstétricas hegemônicas no país e o acesso às informações veiculadas pelas redes sociais e internet. Os dados evidenciaram que a problematização das vacinas (que culminou na tomada de decisão de não vacinar os filhos) ocorreu no contexto do parto humanizado, foi protagonizada pelas mulheres e teve importante influência das informações em saúde veiculadas na internet.

**CONCLUSÕES:** Aspectos socioculturais singulares do contexto brasileiro e da sociedade contemporânea mais ampla estão envolvidos na tomada de decisão em vacinar ou não os filhos. A compreensão desse processo é importante para fornecer subsídios a uma reflexão mais profunda sobre as práticas de saúde e imunização no Brasil, nos novos contextos e desafios do mundo contemporâneo.

**DESCRITORES:** Saúde da Criança. Programas de Imunização. Pais. Fatores Socioeconômicos. Pesquisa Qualitativa.

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## INTRODUCTION

Brazil's National Immunization Program (PNI), founded in 1973 to coordinate vaccination throughout the country, provides universal and free vaccines for 15 vaccine-preventable diseases<sup>a</sup> to children up to one year of age. Brazil's public immunization policy is internationally recognized for achievements such as 100% public financing; domestic production of 96.0% of the vaccines used in the program, bearing international certificates of quality; investment in new technologies and combined vaccines to decrease the number of injections; progressive achievement of extensive vaccine coverage;<sup>2,6,17</sup> eradication of smallpox in 1973,

polio in 1989, and autochthonous measles in 2001; and control of diseases like yellow fever, diphtheria, neonatal tetanus, whooping cough, meningitis caused by *Haemophilus influenzae* type b, mumps, rubella, congenital rubella syndrome, and rabies.<sup>6</sup>

The administration of the basic immunization program for children in Brazil has been continuously expanding, although vaccine coverage varies slightly according to geographic region and socioeconomic level.<sup>6,21</sup> A 2007 national survey of vaccination coverage among children up to 18 months old showed that families with the highest incomes and level of education exhibited the lowest

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<sup>a</sup> BCG vaccine, pentavalent vaccine (diphtheria-tetanus-cellular pertussis-Haemophilus influenzae type b-hepatitis B vaccine), oral live-attenuated human rotavirus vaccine, mixed schedule of inactivated poliovirus vaccine (IPV) followed by oral poliovirus vaccine (OPV), 10-valent pneumococcal conjugated vaccine, meningococcal C conjugated vaccine, measles-mumps-rubella vaccine, yellow fever vaccine (for high-risk areas) and influenza vaccine.<sup>6</sup>

vaccination rate in 10 of Brazil's 27 state and federal-district capitals.<sup>b</sup> Sao Paulo was one of these cities; despite 83.0% of children having received all recommended vaccines, rates of vaccination varied by socioeconomic and education level: class A with 71.2%; class B, 91.7%; class C, 81.9%; class D, 84.4%; and class E, with 81.1%, evidencing a statistically significant difference between classes A and E,<sup>1</sup> which is a trend that has been found in Sao Paulo city since the early 2000s.<sup>16</sup>

In the 1970s, on account of the growing strength of the PNI, low vaccine coverage was most evident among the children of Brazil's poorest and least educated classes, where access to information and health services was still lacking.<sup>22</sup> However, by the turn of the century, vaccine coverage had begun to decrease among children of the most privileged and educated classes in some of the country's urban centers, suggesting a change regarding vaccine endorsement, shifting from a question of vaccination accessibility to vaccination acceptability, particularly among the society's highly educated sectors.<sup>22</sup>

The spread of antivaccine movements via social networks, internet, and media as well as the greater visibility of certain vaccines' adverse effects has affected vaccine acceptance, particularly in some developed countries.<sup>24</sup> The modern antivaccine movement reemerged in England in 1998 following a paper published by Wakefield et al,<sup>23</sup> which reported a link between administration of the measles-mumps-rubella (MMR) vaccine, and autism and colitis/bowel disease. The publication of this article generated a flurry of media attention and hype, culminating in an immediate decrease in vaccine coverage, and consequently, new measles outbreaks in many countries.<sup>3</sup> Despite lacking a confirmed link between the MMR vaccine and autism, and despite the subsequent proof of the fraudulence of the study by Wakefield et al,<sup>9</sup> the claims resulted in a growing antivaccine movement in Europe, the United States, Canada, Japan, Australia, and other countries, which primarily used websites and blogs to put across its agenda.<sup>3,18</sup>

This discussion has largely driven interest in studies (foremost qualitative studies and particularly research based in developed countries) that seek to understand parents' (particularly mothers') acceptance of vaccination and the decision-making process whether to vaccinate their children.<sup>4,14,15,19</sup> Brazil lacks research on the cultural dimensions that influence parents' decision to vaccinate children. This study aimed to analyze socio-cultural aspects involved in the decision-making process for or against vaccination among upper class, highly educated families.

## METHODS

This qualitative study was conducted in the city of Sao Paulo, Southeastern Brazil, between January and July 2011 using in-depth interviews. An open-ended script was used as a guide, which encouraged subjects to speak about their experiences in choosing whether or not to vaccinate their children. The script included the following topics: planning for the children and the experience of pregnancy and labor/delivery; infant daily care and health; decision-making process whether or not to vaccinate the children; influences on the choices made; and the feelings surrounding or resulting from these experiences.

The research meant to favor married couples living together with at least one child aged 0-5 (the age covering most infant/childhood vaccines suggested by the PNI<sup>6</sup>), to access the parental decision at a conjugal level, involving the man and the woman as narrators of child care.

The inclusion criteria of study couples were: highly educated, meaning both parents were at least college graduates; members of the highest social and economic classes;<sup>c</sup> residents in the city of Sao Paulo; couples with children aged up to five years. Exclusion criteria were: parents of children with a chronic disease or a child who had experienced health problems in the perinatal period; separated, divorced or not living at the same address.

To pursue a greater diversity of choices, situations, and meanings regarding childhood vaccination in the investigated social segment, the uptake of couples was guided by the parents' decision concerning vaccination of their children. Participating couples were separated into: vaccinators, those who had vaccinated their children according to PNI recommendations; late or selective vaccinators, those who had purposely chosen only some vaccines and/or who had delayed or put off some vaccination and dose dates; and nonvaccinators, those who had not vaccinated their children. For the groups of vaccinators and late or selective vaccinators, the above rating contemplated all the couple's children. To the nonvaccinators, the criteria of nonvaccination was applied to couples having at least one child in this situation.

Subjects were recruited using a snowball approach, starting from an initial indication and asking each couple interviewed to suggest one or two other couples who might participate in the study. This strategy proves highly effective when recruiting from populations that are a minority, excluded or difficult to access,<sup>13</sup> as is the case with nonvaccinators and late or selective vaccinators. The age of each spouse showed little

<sup>b</sup> Stratification was performed by cluster and classified A to E. This classification considered indicators of housing, education, sanitation and income obtained by the census.

<sup>c</sup> The social and economic classification used in the study was based on the 2011 Criterion of Economic Classification Brazil published by the Brazilian Association of Research Companies. The study included only couples classified in classes A1, A2, B1 and B2. Brazilian Association of Research Companies (BR). 2011 Criterion of Economic Classification Brazil. Sao Paulo; 2011.

variation (women were between 24 and 38 years and men between 29 and 41 years), since having children up to five years was one of the inclusion criteria in the study. This fact brought them close in terms of birth cohorts. It was sought to encompass a diversity of couples according to profession and neighborhood of residence. The couples were accessed from five referral networks, which included a homeopathic obstetrician, a speech therapist, a psychologist, a virtual group for vaccination –, and the researcher.

Interviews were conducted by a researcher who had a medical background and had been properly trained in qualitative research. Father and mothers of 13 couples were interviewed at different moments, and two couples were interviewed at the same time, as desired by couples. The final number of participants was not established *a priori*, but rather based on theoretical saturation.<sup>8</sup> The study ultimately included 15 couples, five in each group: vaccinators, late or selective vaccinators, and nonvaccinators.

The interviews were digitally recorded without interruption. All the recorded interviews were subsequently transcribed verbatim in Portuguese and then checked for accuracy. After extensive reading of the transcribed empirical data, the authors identified both the predefined and the newly emergent themes, and prepared a framework using NVivo software, version 8. The key analytical category discussed in this paper is the decision process surrounding vaccinating or nonvaccinating children. The authors subsequently used the tool for analyzing thematic content<sup>7</sup> to interpret the data and construct a theme-based synthesis of the content. Finally, the ensuing results were compared and analyzed *vis-à-vis* findings reported in literature regarding parental vaccination decisions.

This study was approved by the Research Ethics Committee of the *Faculdade de Medicina* of the *Universidade de São Paulo* (Protocol 251/10). All participants signed an informed consent form. The names reported during the interviews are fictitious.

## RESULTS

The participants' social, economic, and demographic data are listed in the Table. The results showed diverse and particular aspects surrounding the three groups' decisions whether or not to vaccinate their children.

The vaccinators expressed no doubt concerning the decision to vaccinate, given that the spontaneous decision was justified with an acknowledgement of the great benefits of vaccination. The couples' decision to vaccinate was consensually determined by both partners, was not debated, and was justified by the couples as a continuity of family tradition and as a demonstration

of trust in biomedicine and pediatric recommendations. All couples followed the immunization schedule, including vaccine types and administration dates, and vaccinated their children at the location recommended by their children's respective allopathic pediatrician.

*We followed the immunization schedule exactly as indicated. We would take the vaccination card, and the doctor would notify us [of upcoming vaccinations] .... We would tack the next dose on the refrigerator, make note of it in on the calendar, go vaccinate, get the next one, and so on for all the vaccines. (P7)*

Most late or selective vaccinators, however, experienced highly varied situations that were decisive in selecting or choosing to delay some vaccines for their children, such as wariness of "new vaccines" (e.g., the rotavirus vaccine and the H1N1 flu virus vaccine); suspension of subsequent doses after an adverse effect from the first dose of a given vaccine; interruption of the immunization schedule after a negative experience at the Brazilian Unified Health System (SUS) vaccination clinic; and the choice whether or not to vaccinate, being overruled by the condition of enrolling a child at daycare to receive at least the oral poliovirus vaccine. For one couple, the decision process occurred not from a live experience but from the individual analysis of each vaccine and an assessment of its adverse effects or the severity of the disease that the vaccine prevents.

*With some new vaccines, we try to learn a bit more about them to see if they are worth it or not. But for the main ones, we vaccinate. The most dangerous diseases and the most traditional ones, we vaccinate and follow the vaccination card. It's the newer ones that we study more in depth. We listen to his [the pediatrician's] opinion, and do not provide some vaccines. (P18)*

*The second time we went [to vaccinate our son] it was savage; the person was terrible, he administered a shot in [our son's], Antonio's leg, and he limped around for a week. A little tyke just one year and two months old limping, crying, not able to sleep because he couldn't rest his leg on anything. We felt so mistreated and so cheated by the treatment we were given there, and from his reaction, that afterwards we were supposed to go back, but we didn't even bring the subject up for discussion. (P19)*

The nonvaccinators' process in deciding against vaccination was rather homogenous and was part of a broader context of decisions surrounding labor/delivery. The parents, principally the mothers, contrary to obstetric health practices currently predominant in Brazil (including cesarean sections and medicine-based and invasive procedures in Maternity Hospitals such as the application of silver-nitrate drops, vitamin-K injections,

**Table.** Composition of the Study Group and the sociodemographic characteristics of the participants, Sao Paulo city, Southeastern Brazil, 2011.

Study group	Couple	Participants	Sex	Age (years)	Profession	Sex and age of children	Economic class*
Vaccinators	C1	P1	F	33	Manager	M 1 year	A2
		P2	M	36	Manager		
	C2	P3	F	37	Teacher	F 2 years	A2
		P4	M	38	Management analyst		
	C3	P5	F	33	Architect	M 2 years	B1
		P6	M	41	Architect		
	C4	P7	F	38	Psychoanalyst	F 3 years	A2
		P8	M	35	Psychoanalyst & professor		
	C5	P9	F	35	Psychologist	F 3 months	A2
		P10	M	39	Engineer		
Late or selective vaccinators	C6	P11	F	36	International relations	M 3 years & F 1 year	B1
		P12	M	36	Physical education professor		
	C7	P13	F	34	Psychologist	M 6 years & F 4 years	A2
		P14	M	35	Systems analyst		
	C8	P15	F	24	Pedagogue/Educationist	M 1 year	B2
		P16	M	34	Translator		
	C9	P17	F	30	Food engineer	F 8 years & M 1 year	A2
		P18	M	29	Food engineer		
	C10	P19	F	35	Consultant	M 3 years	A2
		P20	M	29	Teacher		
Nonvaccinators	C11	P21	F	32	Nutritionist	F 4 years & F 3 months	B1
		P22	M	32	Sales rep		
	C12	P23	F	34	Biologist	F 10 years & M 4 months	B2
		P24	M	35	Advertising agent		
	C13	P25	F	36	Engineer	F 3 years & F 4 months	A2
		P26	M	35	Engineer		
	C14	P27	F	30	Military police official	F 2 years	B1
		P28	M	35	Military police official		
	C15	P29	F	34	Advertising	F 6 years & M 3 years	A2
P30		M	35	Manager			

M: masculine; F: feminine

\*Brazilian social and economic classification based on the 2011 Criterion of Economic Classification Brazil.

and administration of BCG and hepatitis-B vaccines just after birth), sought information on the possibility of natural, oftentimes home-based, birth (referred to as humanized birth).

In the search for information whether or not to vaccinate their children immediately following delivery, the mothers turned to the internet (including the official sites of the Brazilian Ministry of Health and the World Health Organization, and mostly, social networks that disseminate antivaccine information) and went on to interact online with mothers and fathers who had not vaccinated their children. They then obtained a

wide range of information regarding vaccine efficacy, vaccine effectiveness, number of vaccine doses, vaccine composition, the current epidemiological situation in Brazil and the world regarding the diseases for which vaccination is provided or recommended, the virulence of the infectious agent, disease morbidity and mortality, costs, the pharmaceutical companies producing given vaccines, the Brazilian immunization schedule, the immunization schedule in other countries with the dose calendar, start date or number of different doses in Brazil, and adverse effects in the short and long term. With this information in hand, varying in extent, quantity, and quality, the mothers expressed their fears and

anguish on vaccinating their children, to their partners. Following negotiations between the parents that were sometimes easy and sometimes tense, the couples then decided “jointly” to not vaccinate.

*While I was pregnant, I started to do a little research. And then I remembered that in one of the labor/delivery lists, some of the women had said, “Hey, vaccination isn’t necessary”, and they said they hadn’t vaccinated their children. I had always learned that you had to vaccinate. I asked, “What do you mean you didn’t vaccinate? You can opt not to vaccinate?” I had never thought about this, about vaccination. (P27)*

*They were people first that talked about the fraudulence of vaccines, and the scientific texts to which I had access... everyone has access; you just go onto Google. So I started to listen to more people, to people’s experience, and the more I heard, the more I researched, to see if there was a scientific basis to really evaluate this and say, “No, what they’re saying is real; it makes sense”. (P23)*

## DISCUSSION

The first distinction among the three interviewed groups of couples is the spectrum ranging from full acceptance of vaccination, in couples that vaccinated until their denial, proceeding through different shades of questioning among couples who selected and did not vaccinate their children, reflecting distinctions in handling and way of relating to child. The full vaccination acceptance expressed by the vaccinators is a reflection of the legitimacy they confer on advances in medical vaccination technology and of their trust in the pediatrician to care for their children. As they see it, vaccinating their children is part of a natural process. This posture is also reported in other international studies that seek to identify parent’s attitudes and characteristics regarding vaccination of their children. The studies, also referred to as “unquestioning acceptors” or “vaccinators accepters”, were characterized by parents having a good relationship with their respective allopathic pediatricians, trust in their choices, and a less detailed knowledge about vaccination.<sup>4,14,19</sup> In this study, conducted in the Brazilian context in which one observes a “culture of vaccination”<sup>11</sup> strongly influenced by efficiency and universal access to PNI,<sup>2,6,17</sup> vaccinating children belongs to an internalized parental process, expressed by them as parental responsibility, and therefore fully in line with the positioning of the Brazilian public health.

The vaccination acceptance was also initially found among the male parents in the other groups, since the doubts and questions were initially raised by the women. These findings are original to this study, as

international studies into the decision and choice to vaccinate or not vaccinate were based mostly on statements and interviews with women,<sup>4,15</sup> and even studies that included both parents did not explore the varying perspectives of the different genders. The findings also indicate that the process of questioning the vaccination emerges starting with the gestation period of some women, when they come across information, via the internet or in-person discussion groups, with the purpose to exploit themselves for the experience of humanized childbirth and/or active motherhood.<sup>20</sup>

In this context, a strong critique of technology and the medicalization of childbirth and child health<sup>20</sup> emerges and promote tensions in an area hitherto unquestioned. To this end, men are called upon to review and even break away from their positioning, invited by their partners, which reinforce the place of women in decisions regarding health care in the family.<sup>10</sup>

In the group of selective vaccinators interviewed, the different situations that led parents to partially vaccinate their children also showed different expressions of the movement of singularization in the face of the PNI’s recommendation *en masse*. In particular, in the case of parents who did not vaccinate, the questioning of child vaccination should be seen as a reflection of criticism within the practices of maternal and child health resulting from wider contemporary processes.

Initially, referring to the context of questioning the vaccine, it was shown that the crisis in and criticism of the hegemonic, C-section-centric, interventionist, hospital-centric model of obstetrics in Brazil,<sup>21</sup> and from the consequent active and reflective search for labor/delivery alternatives to conventional biomedicine that opened the doors to access information regarding vaccination at birth and subsequently to the avalanche of information opposed to vaccination. Most nonvaccinators interviewed do not question the vaccine *per se a priori*; questioning vaccination was always raised in the context of pregnancy, labor/delivery and paternal experience. Ultimately, this led to a break in a practice previously respected by the nonvaccinators, and in a wider sense, to a break in the credibility of a long-standing medical intervention in Brazil.

Undoubtedly, the options for some couples to seek the experience of humanized childbirth and active maternity in their marital path represented the main difference for the paradigm shift that justifies the fact that one group fully accepted the vaccine and the other questioned it, and even refused to vaccinate their children.

This finding should be analyzed and put into the context of the search for, use of, and sharing of technical information on health carried by women. Health information, through growing dissemination via social networks and internet in the context of contemporary urban Brazilian

and international society, has brought changes reflected in the relationship between the study subjects and health professionals.<sup>12</sup> In the past, technical information on vaccines was mainly circulated among health professionals. In the last two decades, with the phenomenon of the internet, this information and that originated by antivaccination movements has been accessible by the family anywhere in the world.

Access to information by individuals who see themselves as the protagonists of their own lives concurrently culminates in the individual's believing him or herself an expert even when such subject matter does not compose his or her expertise. Thus, given the variety of information both in favor and against vaccination, official discourse by health professionals can lose ground, reliability, and legitimacy.

It should be considered in this process that the use of medical and epidemiological base information is focused on justifying the risks of vaccines and not the risks of diseases that would be preventable by them. In other words, they build rereadings of the risk.<sup>5</sup>

Our findings regarding the recent phenomenon of choosing against vaccination expose similarities and differences between highly educated, upper class families in Brazil in comparison with families from developed countries as reported in international literature.<sup>4,12,14,15,18,19,24</sup> In synthesis, with regard to decision-making process concerning the vaccination of children, the findings evidence features particular to the Brazilian milieu,

foremost the relation among labor/delivery and the female role in the matter of reflection on vaccination. In contrast, the weight of information regarding vaccines and the variation between the full acceptance position of vaccinators and the questioning position of nonvaccinators are consistent with the findings reported in international studies.<sup>4,14,19</sup>

Our findings showed little correlation between the decision-making in not vaccinate and fear of autism and its possible relation to the vaccine MMR, as reported in European literature<sup>3,4,9,14,15,18,19,24</sup> on the theme that has as highlight the impact of Wakefield's study.<sup>23</sup> However, significant findings are shared with the international literature such as, between selective and nonvaccinators, the great influence of pediatricians who follow a nonbiomedical orientation and the search for other sources of information beyond that conveyed by the pediatrician.<sup>4,14,19</sup>

The results of this study allow us to rethink Brazil's present health practice related to the immunization system and maternal and childcare. Moreover, the late or selective vaccinators' statements revealed situations that could be avoided or diminished through better reception, humanization, and an enhancement of dialogue between health professionals and their users.

Studies like this one, which seek to understand the decision-making process behind vaccinating or not vaccinating one's child, significantly contribute to a deeper reflection of health and immunization practices in Brazil and the world in the face of the new environment and challenges faced by world today.

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