

Factors associated with COVID-19 vaccination among pregnant women in Rio de Janeiro City, Brazil

SUPPLEMENTARY MATERIAL

All raw data from the information systems are available at:

- <http://sistemas.saude.rj.gov.br/tabnet/tabcgi.exe?sinasc/nascido.def>
- http://sistemas.saude.rj.gov.br/tabnetbd/dhx.exe?pni_covid/pni_covid.def

The de-identified linkage dataset and the programming codes could be made available under the request.

1. Dataset information before linkage

Table 1. The date range of live birth records from the Live Birth Information System (SINASC) before linkage and inclusion and exclusion criteria

Date of birth		
N	Valid	194848
	Missing	0
Minimum		01-JAN-2020
Maximum		28-AUG-2022

Table 2. The date range of vaccination records from the National Immunization Program Information System (SI-PNI) before linkage

Date of vaccine doses		Date of first	Date of second	Date of Jansen's	Date of third	Date of fourth
N	Valid	108875	99563	3933	60618	13805
	Missing	85973	95285	190915	134230	181043
Minimum		19-JAN-2021	19-JAN-2021	19-JAN-2021	22-JUN-2021	05-FEB-2021
Maximum		23-AUG-2022	31-AUG-2022	31-AUG-2022	22-JUL-2022	31-AUG-2022

2. Study population selection after the linkage

2.1 Inclusion criteria

Date of birth 01/08/21 - 31/07/22

Age $18 \geq \text{Age} \leq 49$

Complete data on Gestational Age (GA)

2.2 Exclusion criteria

Implausible GA (>44 weeks)

Multiple births

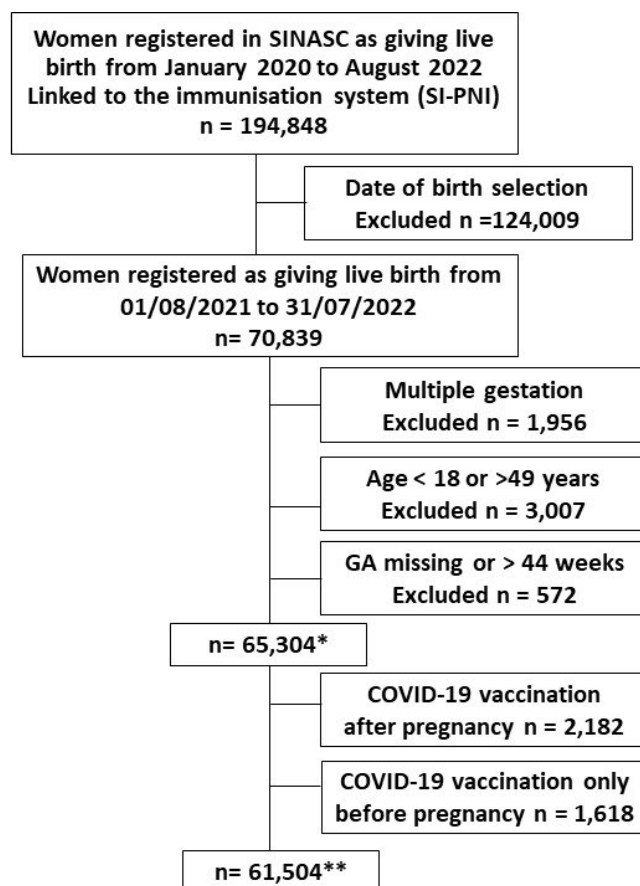


Figure 1. Flow chart of study population selection

3. Population after inclusion and exclusion criteria (Figure 2)

Table 3. Population groups by vaccination

Groups	Frequency (n)	Percentage (%)
Never vaccinated	26,762	41.0
Vaccinated during pregnancy	34,742	53.0
Vaccinated before	1,628	2.6
Vaccinated after	2,172	3.4
Total	65,304	100.0

4. Maternal Vaccination up to delivery (Figure 3)

Table 4. The proportion of COVID-19 Maternal Vaccination (Figure 3)

Month of delivery	Total births	At least 1 dose (n)	At least 1 dose (%)	At least two doses (n)	At least two doses (%)
Aug/2021	5,566	2,499	45	778	14
Sep/2021	5,507	2,836	52	1,377	25
Oct/2021	5,300	2,992	57	2,131	40

Nov/2021	5,422	3,030	56	2,441	45
Dec/2021	5,457	3,213	59	2,678	49
Jan/2022	5,562	3,114	56	2,691	48
Feb/2022	5,426	3,068	57	2,692	50
Mar/2022	6,017	3,506	58	3,098	51
Apr/2022	5,642	3,262	58	2,856	51
May/2022	5,783	3,296	57	2,895	50
Jun/2022	5,169	2,981	58	2,633	51
Jul/2022	4,453	2,573	58	2,310	52
Average	65,304	36,370	56	28,580	44

5. Vaccination during Pregnancy

Table 5. Type of vaccines and doses received during pregnancy

	d1		d2		d3		d4		Total	%
	n	%	n	%	n	%	n	%		
AstraZeneca	1,472	5.7	962	3,7	180	2,2	3	2,7	2,617	4.4
Coronavac	7,910	30.4	7,618	29,6	592	7,3	25	22,7	16,145	27.0
Pfizer	16,518	62.5	17,137	66,6	7250	89,0	80	72,7	40,985	68.3
Janssen	105	0.0			128	1,6	2	1,8	235	0.3
Total	26,005	100,0	25,717	100,0	8150	100,0	110	100,0	59,982	100

Table 6. Trimester of vaccination by type of dose

Trimester	d1	d2	d3	d4	total
First (0-97 days)	10	7,299	480	1	7,790
Second (98-195 days)	10,856	10,441	3,423	5	24,725
Third (>195 days)	4,892	7,977	4,247	104	17,220
Total	26,005	25,717	8,150	110	59,982

6. Results of bivariate regression and models of multivariate logistic regression

Table 7. Association of COVID-19 vaccination uptake during pregnancy compared to no vaccination

Determinants	Bivariate logistic regression	Multiple logistic regression
	OR (CI 95%)	aOR (CI 95%)
Sociodemographic		Model 1^a
Age (years)		
18-24 (ref)	1	1
25-34	0.75 (0.73-0.78)	0.98 (0.94-1.03)
≥35	0.81 (0.77-0.85)	1.21 (1.15-1.28)
Education (years)		
None to 7	1.60 (1.51-1.70)	1.09 (1.02-1.17)
8 to 11	1.48 (1.43-1.53)	1.11 (1.06-1.16)
≥ 12 (ref)	1	1

Self-identified skin colour		
White (ref)	1	1
Black	1.34 (1.28-1.41)	1.10 (1.04-1.16)
Parda/Brown	1.27 (1.23-1.32)	1.05 (1.01-1.09)
Marital status		
Without a partner	2.24 (2.16-2.31)	2.24 (2.16-2.34)
With partner (ref)	1	1
Obstetric		Model 2^b
Antenatal care appointments		
0-3 (ref)	1	1
4-6	1.33 (1.21-1.45)	1.35 (1.23-1.49)
> 6	1.55 (1.43-1.70)	1.92 (1.75-2.09)
Previous live births		
0 (ref)	1	1
1 to 2	1.00 (0.96-1.03)	0.98 (0.94-1.02)
≥3	1.14 (1.07-1.21)	0.97 (0.90-1.04)
Previous child loss		
None (ref)	1	1
One or more	1.09 (1.05-1.13)	1.06 (1.02-1.11)
OR: crude <i>odds ratio</i>. aOR: adjusted <i>odds ratio</i>. Hierarchical models 1 and 2 are displayed separately. Ref: variable used as the reference in regression. Month-year of conception and the gestational week at delivery are included as confounding variables in both analyses. ^aModel 1: included sociodemographic (age, education, self-identified skin colour, marital status) ^bModel 2: included obstetric (the total number of antenatal care appointments, the number of previous live births, the number of previous child loss) and sociodemographic (age, education, self-identified skin colour, marital status)		

Table 8. Summary of valid and missing cases by variable

Variables	All cases					
	Valid cases		Missing cases		Total	
	N	%	N	%	N	%
Age	61504	100,0%	0	0,0%	61504	100,0%
Education	59712	97,1%	1792	2,9%	61504	100,0%
Self-identified skin colour	58842	95,7%	2662	4,3%	61504	100,0%
Marital Status	60974	99,1%	530	0,9%	61504	100,0%
Number of antenatal care appointments	58758	95,5%	2746	4,5%	61504	100,0%
Previous live births	60422	98,2%	1082	1,8%	61504	100,0%
Previous child loss	59745	97,1%	1759	2,9%	61504	100,0%