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SCIENTIFIC LETTER

Reluctance of parents to immunize their children with nirsevimab☆

Reticencia de los progenitores a la inmunización de sus hijos con nirsevimab

Dear Editor,

In September 2023, in the Autonomous Community of Madrid, Spain, less than 15 days before the introduction of immunization with nirsevimab,[1] there was no official document to inform parents who had to decide whether or not to immunize their newborn children. Furthermore, in the developed world, there has been a worrying rise in anti-vaccination movements for more than two decades.[2,3] It was in this context that we undertook the present study to explore the potential hesitancy of parents in regard to immunization with nirsevimab in a public secondary care hospital, analyzing potential associated factors that could influence the decision.

We conducted a prospective observational descriptive study by means of a voluntary survey of parents of newborns between October 1, 2023 and March 31, 2024. We estimated that obtaining data for more than 85% of infants born during the study period would achieve a sufficient sample size with an error of less than 1%, a level of heterogeneity of 50% and a 95% confidence level. The statistical analysis was performed with the software SPSS version 29.0.

During the study period, 312 infants were born, of who 41 were excluded: 30 because the parents refused to participate, two because they required transfer to another hospital, seven because they were twins and a single response was obtained per pair of twins and 2 due to a language barrier. We analyzed data from 271 parental responses (86.9% of newborns), 6 corresponding to single-parent families.

Of the total sample, 92.3% of parents chose to administer nirsevimab, and the main reason was, most frequently, the recommendation of the neonatal care team (85%). Only 38% reported having received sufficient information about it before the child was born.

When we analyzed the differences between those who decided to immunize and those who decided against it, we found that parents with a university education were more likely to opt to immunize their offspring (mothers: $P < .05$, OR [95% CI] = 2.47 [1.00–6.17]; fathers: $P < .01$, OR [95% CI] = 3.30 [1.32–9.00]) and, in relation to geographical origin, parents from Morocco were more likely to exhibit hesitancy (mothers, $P < .05$; fathers, $P < .001$). Thirty-two percent of participating families reported a history of bronchiolitis in a previous child, and these families were more likely to agree to immunization ($P < .05$; OR [95% CI], 3.95 [1.06–25.7]). With regard to the use of social media as a source of health information, 48.7% used social media frequently or continuously, and these parents exhibited greater hesitancy ($P = .012$; OR [95% CI], 0.2 [0.06–0.69]). Of those who reported hesitancy, 2.5% expressed resistance to the future administration of other vaccines ($P < .001$; OR [95% CI], 32.1 [5.38–217]). The most frequent reasons for hesitancy were fear of side effects (81%), lack of information (75%) and the belief that nirsevimab is an experimental drug (56%) (Tables 1 and 2).

Studies performed[4–6] a year after the introduction of immunization with nirsevimab have focused on assessing the effectiveness, impact and decrease in medical visits and hospitalization due to bronchiolitis, with very encouraging results. In Spain, high immunization coverage rates were achieved during the 2023–2024 season,[4] with a mean coverage rate of 92% in infants born during the season and 88% in infants born before season onset. The overall coverage rate for the Autonomous Community of Madrid was 86%.[6]

The main limitation of the study is a direct consequence of the chosen methodology, as we relied on parental responses without verifying the provided information. Furthermore, in 29 cases we were unable to explore the reasons why parents decided against immunizing their children. The main strength of the study is that it is the first study in Spain analyzing the reasons why parents are reluctant to have their children immunized with nirsevimab.

Identifying factors that may affect the administration of nirsevimab is important in order to maintain or even increase

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☆ Previous presentation: This study was presented as an oral communication titled ''Análisis de la posible reticencia de los padres a la inmunización de sus hijos recién nacidos con nirsevimab'' at the 70th Congress of the Asociación Española de Pediatría; June 6–8, 2024; Cordoba, Spain.

Table 1 Univariate analysis assessing the association of study variables with the decision whether to administer nirsevimab to the infant.

Variable	Administration of nirsevimab		*P*	OR (95% CI)
	No	Yes		
Maternal age	No. (%)	No. (%)	.596	
≤ 20 years	0 (0.0%)	4 (1.6%)		
21-25 years	2 (9.5%)	31 (12.4%)		
26-30 years	3 (14.3%)	48 (19.2%)		
31-35 years	9 (42.9%)	79 (31.6%)		
36-40 years	5 (23.8%)	79 (31.6%)		
≥ 41 years	2 (9.5%)	9 (3.6%)		
Maternal educational attainment	No. (%)	No. (%)	.164	
No education	0 (0.0%)	7 (2.8%)		
Primary education	1 (4.8%)	11 (4.4%)		
Compulsory secondary education	10 (47.6%)	59 (23.6%)		
Noncompulsory secondary education	5 (23.8%)	67 (26.8%)		
University degree	5 (23.8%)	106 (42.4%)		
Mother with university degree	No. (%)	No. (%)	.050	
No	11 (52.4%)	77 (3.8%)		Ref.
Yes	10 (47.6%)	173 (69.2%)		2.47 (1.00–6.17)
Maternal nationality	No. (%)	No. (%)	.012	
Spanish	9 (42.9%)	136 (54.4%)		Ref.
Moroccan	8 (38.1%)	28 (11.2%)		0.23 (0.08–0.67)
Colombian	0 (0.0%)	15 (6.0%)		
Other	4 (19.0%)	71 (28.4%)		1.17 (0.37–4.46)
Maternal continent of origin	No. (%)	No. (%)	.029	
Western Europe	9 (42.9%)	142 (56.8%)		Ref.
Africa	8 (38.1%)	30 (12.0%)		0.24 (0.08–0.68)
Eastern Europe	2 (9.5%)	13 (5.2%)		0.41 (0.09–2.89)
Latin America	2 (9.5%)	63 (25.2%)		2.00 (0.50–13.3)
Other	0 (0.0%)	2 (0.8%)		
Mother: Spanish vs Moroccan	No. (%)	No. (%)	.007	
Spanish	9 (52.9%)	136 (82.9%)		Ref.
Moroccan	8 (47.1%)	28 (17.1%)		0.23 (0.08–0.67)
Mother: Spanish vs Eastern European	No. (%)	No. (%)	.347	
Spanish	9 (81.8%)	136 (91.3%)		Ref.
Eastern European	2 (18.%)	13 (8.7%)		0.43 (0.10–3.02)
Mother: Spanish vs Latin American	No. (%)	No. (%)	.324	
Spanish	9 (81.8%)	136 (68.3%)		Ref.
Latin American	2 (18.2%)	63 (31.7%)		2.08 (0.52–13.9)
Paternal age	No. (%)	No. (%)	.916	
≤ 20 years	0 (0.0%)	2 (0.8%)		
21-25 years	1 (4.8%)	9 (3.7%)		
26-30 years	3 (14.3%)	34 (13.9%)		
31-35 years	5 (23.8%)	76 (31.1%)		
36-40 years	7 (33.3%)	74 (3.3%)		
≥ 41 years	5 (23.8%)	49 (2.1%)		
Paternal educational attainment	No. (%)	No. (%)	.052	
No education	0 (0.0%)	5 (2.0%)		
Primary education	3 (14.3%)	10 (4.1%)		
Compulsory secondary education	11 (52.4%)	77 (31.6%)		
Noncompulsory secondary education	3 (14.3%)	75 (3.7%)		
University degree	4 (19.0%)	77 (31.6%)		
Father with university degree	No. (%)	No. (%)	.010	
No	14 (66.7%)	92 (37.7%)		Ref.
Yes	7 (33.3%)	152 (62.3%)		3.30 (1.32–9.00)

Table 1 (*Continued*)

Variable	Administration of nirsevimab		*P*	OR (95% CI)
	No	Yes		
Paternal nationality			.001	
Spanish	6 (28.6%)	141 (57.8%)		Ref.
Moroccan	9 (42.9%)	27 (11.1%)		0.13 (0.04–0.38)
Colombian	0 (0.0%)	17 (7.0%)		
Other	6 (28.6%)	59 (24.2%)		0.42 (0.13–1.39)
Paternal continent of origin	No. (%)	No. (%)	.001	
Western Europe	6 (28.6%)	144 (59.0%)		Ref.
Africa	9 (42.9%)	28 (11.5%)		0.13 (0.04–0.39)
Eastern Europe	3 (14.3%)	7 (2.9%)		0.10 (0.02–0.53)
Latin America	3 (14.3%)	63 (25.8%)		0.87 (0.22–4.25)
Other	0 (0.0%)	2 (0.8%)		
Father: Spanish vs Moroccan	No. (%)	No. (%)	< .001	
Spanish	6 (40.0%)	141 (83.9%)		Ref.
Moroccan	9 (60.0%)	27 (16.1%)		0.13 (0.04–0.38)
Father: Spanish vs Eastern European	No. (%)	No. (%)	.010	
Spanish	6 (66.7%)	141 (95.3%)		Ref.
Eastern European	3 (33.3%)	7 (4.7%)		0.10 (0.02–0.54)
Father: Spanish vs Latin American	No. (%)	No. (%)	.877	
Spanish	6 (66.7%)	141 (69.1%)		Ref.
Latin American	3 (33.3%)	63 (3.9%)		0.89 (0.23–4.34)
Use of social media	No. (%)	No. (%)	.120	
Never	5 (23.8%)	54 (21.6%)		Ref.
Sometimes	5 (23.8%)	75 (3.0%)		1.39 (0.37–5.22)
Frequently	5 (23.8%)	96 (38.4%)		1.78 (0.47–6.66)
All the time	6 (28.6%)	25 (1.0%)		0.39 (0.10–1.40)
Social media: none vs some			.816	
None	5 (23.8%)	54 (21.6%)		Ref.
Some	16 (76.2%)	196 (78.4%)		1.13 (0.36–3.05)
Social media: a little vs a lot			.726	
A little	10 (47.6%)	129 (51.6%)		Ref.
A lot	11 (52.4%)	121 (48.4%)		0.85 (0.34–2.09)
Sufficient information			.150	
No	16 (76.2%)	152 (6.8%)		Ref.
Yes	5 (23.8%)	98 (39.2%)		2.06 (0.78–6.47)
Previous children	No. (%)	No. (%)	.031	
No	4 (19.0%)	105 (42.0%)		Ref.
yes	17 (81.0%)	145 (58.0%)		0.32 (0.09–0.91)
Number of previous children	No. (%)	No. (%)	.064	
None	4 (19.0%)	105 (42.0%)		Ref.
One	8 (38.1%)	96 (38.4%)		0.46 (0.12–1.50)
Two	7 (33.3%)	34 (13.6%)		0.19 (0.05–0.65)
More than 2	2 (9.5%)	15 (6.0%)		0.29 (0.05–2.19)
Bronchiolitis in previous child	No. (%)	No. (%)	.040	
No	15 (88.2%)	95 (65.5%)		Ref.
Yes	2 (11.8%)	50 (34.5%)		3.95 (1.06–25.7)
Hospital care due to bronchiolitis in previous child	No. (%)	No. (%)	.075	
No	15 (88.2%)	95 (65.5%)		Ref.
Yes, no admission	2 (11.8%)	25 (17.2%)		1.97 (0.51–13.0)
Yes, admission to ward	0 (0.0%)	21 (14.5%)		
Yes, admission to PICU	0 (0.0%)	4 (2.8%)		
Other vaccines	No. (%)	No. (%)	.001	
No	4 (19.0%)	3 (1.2%)		Ref.
Yes	17 (81.0%)	247 (98.8%)		19.4 (3.98–105)
Other vaccines	No. (%)	No. (%)	.001	

Table 1 (*Continued*)

Variable	Administration of nirsevimab		*P*	OR (95% CI)
	No	Yes		
None	3 (14.3%)	1 (0.4%)		Ref.
Not all	1 (4.8%)	2 (0.8%)		6.00 (0.27–296)
Yes	17 (81.0%)	247 (98.8%)		43.6 (5.27–908)

A *P* value of less than 0.05 indicates an association of the variable with the administration of nirsevimab. The OR assesses the direction and magnitude of the association taking the first category as reference. An OR > 1 and a *P* < .05 indicate a greater probability that infants in the group will receive nirsevimab compared to the reference group. In contrast, an OR < 1 with a *P* < .05 indicate a lower probability in that group of receiving nirsevimab compared to the reference group.
CI, confidence interval; OR: odds ratio; PICU, pediatric intensive care unit; Ref, reference group.

Table 2 Multivariable logistic regression analysis of the variables associated with the decision of parents to administer nirsevimab to their newborn infant.

Variable	OR	(95% CI)	*P*
Other vaccines	32.1	(5.38–217)	< .001
Paternal nationality			
Spanish	1.00		
Moroccan	0.9	(0.02–0.3)	< .001
Other	0.58	(0.15–2.16)	.404
Continuous social media use	0.20	(0.06–0.69)	.012

An OR of less than 1 indicates greater reluctance toward administration of nirsevimab, and an OR greater than 1 a lesser reluctance toward it.
CI, confidence interval; OR: odds ratio.

coverage. To our knowledge, no studies published to date have analyzed the potential reasons for hesitancy in the administration of nirsevimab. According to our findings, the factors associated with hesitancy were not having a university education, Moroccan origin, a history of bronchiolitis in a previous child (regardless of severity), ''vaccine phobia'' and the use of social media as one of the main sources of health information before childbirth.

Declaration of competing interest

The authors have no conflicts of interest to declare.

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