Describing the burden of RSV infection and subsequent wheezing in toddlers: an international cross-sectional study

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Authors: Laurent Julie[1], Ficara Valentine[1], Haidar Sahar[1]
1. Carenity, Online Patient Community, Paris, France

Aims

Respiratory syncytial virus (RSV) is a leading cause of respiratory tract infection in children [1]. This study aimed to describe RSV and **subsequent wheezing burden in toddlers** aged 6 to 24 months and their parents.

Methods

An international **cross-sectional survey** was conducted in the US, UK, Spain and Italy from February to April 2023 and enrolled 1,200 parents of children under 6 years old, allocated into 2 groups: a reference group (n=600 children never diagnosed with bronchiolitis/RSV) and a RSV group (n=600 children diagnosed with bronchiolitis/tested RSV-positive before 2 years old and in the past 5 years) [2]. In this secondary analysis exploring RSV infections in **toddlers,** we focused on the subgroup of children who contracted RSV/bronchiolitis **between 6 and 24 months** (n=432). Bivariate analyses were conducted to compare them to the reference group, and multivariable logistic regressions were used to assess the association between RSV and wheezing.

n=254 n=249 n=267 n=262

Results

Subgroups profiles

1,032 parents of children <6 y/o

Reference group: **600** children never diagnosed with bronchiolitis/RSV → Reference group with wheezing: Among them, 141 children (23.5%) had a history of wheezing

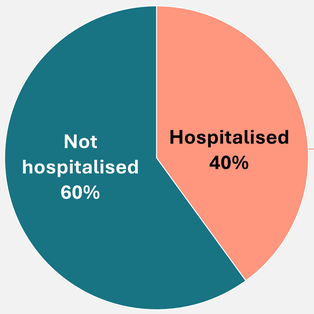
New sub-analysis:

RSV group: **432** children diagnosed with bronchiolitis/RSV between **6 and 24 months** → RSV group with wheezing: Among them, 253 children (59%) had a history of wheezing

Characteristics of the RSV infections in the RSV group

Sample: RSV group, 432 children with bronchiolitis/tested RSV-positive between 6 and 24 months

- Mean age at RSV diagnosis: 14.6 months (SD:5.4)



Admission in paediatric intensive care unit (PICU)

Admission in PICU/ICU	39%	67
No admission in PICU/ICU	61%	106

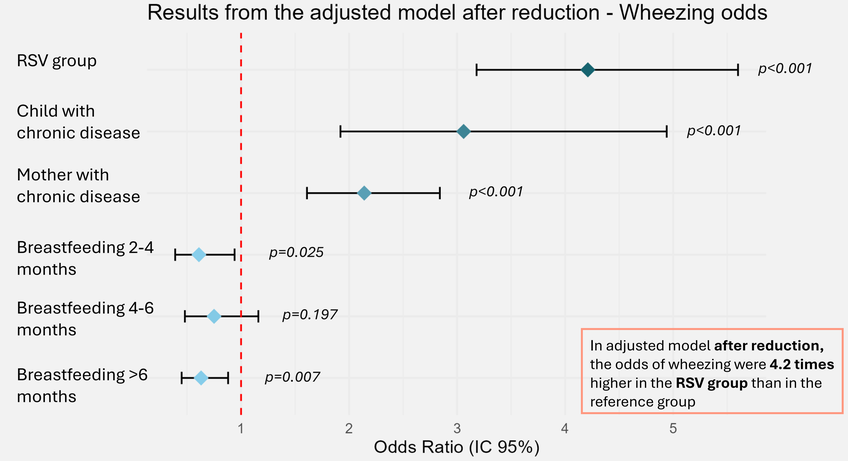
Placement under respiratory support

Yes	59%	102
No	41%	71

➔ 59% developed short- or long-term complications

Wheezing odds from a multivariate logistic regression

Results from the adjusted model after reduction - Wheezing odds



In adjusted model **after reduction,** the odds of wheezing were **4.2 times** higher in the **RSV group** than in the reference group

Wheezing-related healthcare utilization

Number of wheezing-related visits to healthcare professionals since wheezing onset

Statistical comparison between groups: Chi-squared test § / Fisher's exact test ∫

	RSV group with wheezing n=253				Reference group with wheezing n=141					
	> 12	4 to 12	1 to 3	None	> 12	4 to 12	1 to 3	None		
General practitioner	206	33%	49%	15%	3%	1%	6%	48%	46%	120	p=0.009∫
Paediatrician	253	24%	53%	19%	4%	1%	10%	45%	43%	141	p<0.001§
Nurse practitioner	206	62%	27%	9%	2%	3%	24%		73%	120	p=0.032∫
Respiratory system specialist	253	47%	37%	14%	3%	1%	23%		77%	141	p<0.001∫
Another medical specialist	253	72%	20%	6%	2%	1%	7%		92%	141	p<0.001∫
Hospital emergency department	253	49%	40%	9%	2%	1%	6%	29%	65%	141	p=0.023∫
Supportive care*	253	77%		17%	2% 5%	3%	8%		89%	141	p=0.012∫

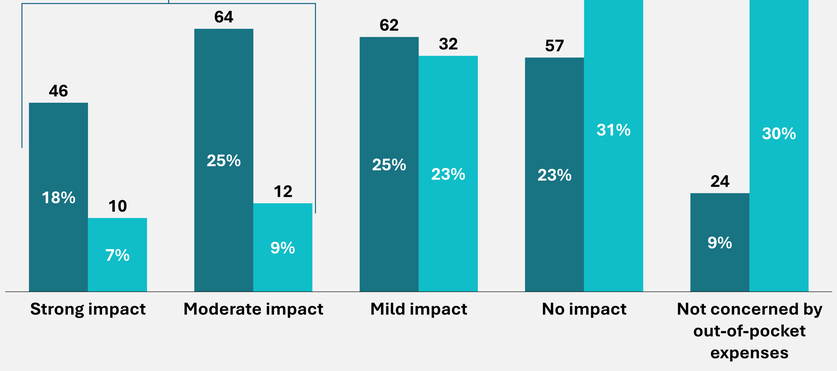
* *Supportive care includes: acupuncturist, chiropractor, homeopath, physiotherapist, or psychologist.*

Impact of wheezing-related costs on parents' way of living

p<0.001

RSV group n=253 / Reference group n=141

43% for the **RSV group** reported a moderate to strong impact vs **16%** in the **reference group**



Impact of wheezing on parents' life

Impact of wheezing on different aspects of parents' daily life

Statistical comparison between groups: Chi-squared test

	RSV group with wheezing n=253					Reference group with wheezing n=141						
	Insignificant impact	Minor impact	Moderate impact	Major impact	Severe impact	Insignificant impact	Minor impact	Moderate impact	Major impact	Severe impact		
Activities of daily life	253	16%	35%	27%	17%	5%	25%	35%	25%	14%	1%	141	p=0.02
Emotional well-being	253	7%	22%	27%	25%	18%	30%	19%	34%	14%	3%	141	p=0.006
Social life	253	4%	25%	30%	21%	21%	35%	23%	28%	13%	2%	141	p=0.005
Family relationships	253	5%	14%	32%	22%	28%	42%	26%	22%	9%	2%	141	p=0.014
Professional life	253	6%	18%	25%	17%	33%	46%	23%	20%	9%	2%	141	p=0.004

Insignificant impact · Minor impact · Moderate impact · Major impact · Severe impact

Conclusions

Wheezing represents a **considerable physical, financial and psycho-social burden** for toddlers and their families, and appears to be both **more frequent** and **more impactful** in children with **RSV history.**

References and funding statements

1. Respiratory syncytial virus (Rsv). https://www.who.int/news-room/fact-sheets/detail/respiratory-syncytial-virus-(rsv). Accessed August 5, 2025.
2. Custovic A, Mestre-Ferrandiz J, Kragten-Tabatabaie L, et al. Parent's perception of respiratory syncytial virus and subsequent wheezing burden: A multi-country cross-sectional survey. Pediatric Allergy Immunology. 2024;35(6):e14169. doi:10.1111/pai.14169

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