

Nationwide Analysis of Child Development Amid the COVID-19 Pandemic

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Background

Early childhood is considered a sensitive period in terms of exposure to external stressors with possible implications on child development. The stress and changes caused by the COVID-19 pandemic may affect the achievements of developmental milestones in the early years of life. **This study aims to compare developmental achievements among infants who were born during the pandemic with those who were born before the pandemic.**

Methods

This retrospective cohort study included children who were followed at the Maternal Child Health Clinics from birth up to two years of age. Developmental milestones at 18-24 months were compared in four domains between:

Infants born before the pandemic
1.1.2017 - 31.12.2017

Infants born during the pandemic year
1.1.2020 - 31.12.2020

Results

A total of 182,040 children were included, of those, 86,558 were born during the pandemic and 95,482 were born before the pandemic.

A - main analysis: Infants who were born during the pandemic were more likely to have developmental delays in all four domains than infants who were born before the pandemic.

In addition to the main analysis, several sensitivity analyses were conducted:

B - When restricting the pandemic group to children without documentation of COVID-19 infection the association between birth during pandemic and developmental delays remained significant in all four domains.

C - Restriction to children from low (1-2) socioeconomic status revealed association between birth during pandemic and social-emotional and language delays.

D - Restriction to January-February-born infants found that being born during pandemic years was associated with increased risk for social-emotional and language delays.

Conclusion

Children who were born during the pandemic had higher rates in developmental delays compared to those who were born before the pandemic, mainly in the socio-emotional and language domains. The findings of this first large study in Israel emphasize the importance of the healthcare system preparedness for preventive measures of developmental delays during social restrictions scenarios.

Multivariable analysis of the association between birth during the pandemic and the risk for developmental delays at 18-24 months

A - main analysis^a (n=182,040)

	aOR (95% CI)	0.8	1.0	1.2	1.4	P-value
Gross motor	1.08 (1.03-1.14)					<0.01
Fine motor	1.08 (1.04-1.13)					<0.01
Social-emotional	1.13 (1.09-1.16)					<0.01
Language	1.14 (1.11-1.17)					<0.01

B - restriction to children without documentation of COVID-19 infection during the first two years of life^a (n=160,540)

	aOR (95% CI)	0.8	1.0	1.2	1.4	P-value
Gross motor	1.09 (1.03-1.14)					<0.01
Fine motor	1.09 (1.04-1.13)					<0.01
Social-emotional	1.13 (1.09-1.16)					<0.01
Language	1.15 (1.12-1.18)					<0.01

C - restriction to children from low (1-2) socioeconomic status^a (n=34,427)

	aOR (95% CI)	0.8	1.0	1.2	1.4	P-value
Gross motor	1.05 (0.94-1.19)					0.3
Fine motor	1.06 (0.97-1.15)					0.1
Social-emotional	1.12 (1.03-1.21)					<0.01
Language	1.19 (1.13-1.26)					<0.01

D - restriction to infants who were born in January and February^a (n=30,340)

	aOR (95% CI)	0.8	1.0	1.2	1.4	P-value
Gross motor	1.07 (0.94-1.22)					0.2
Fine motor	0.98 (0.88-1.09)					0.7
Social-emotional	1.25 (1.15-1.35)					<0.01
Language	1.24 (1.16-1.33)					<0.01

^a adjusted for sex, nationality, socioeconomic status, maternal origin, maternal marital status, maternal age at birth, and birth weight.