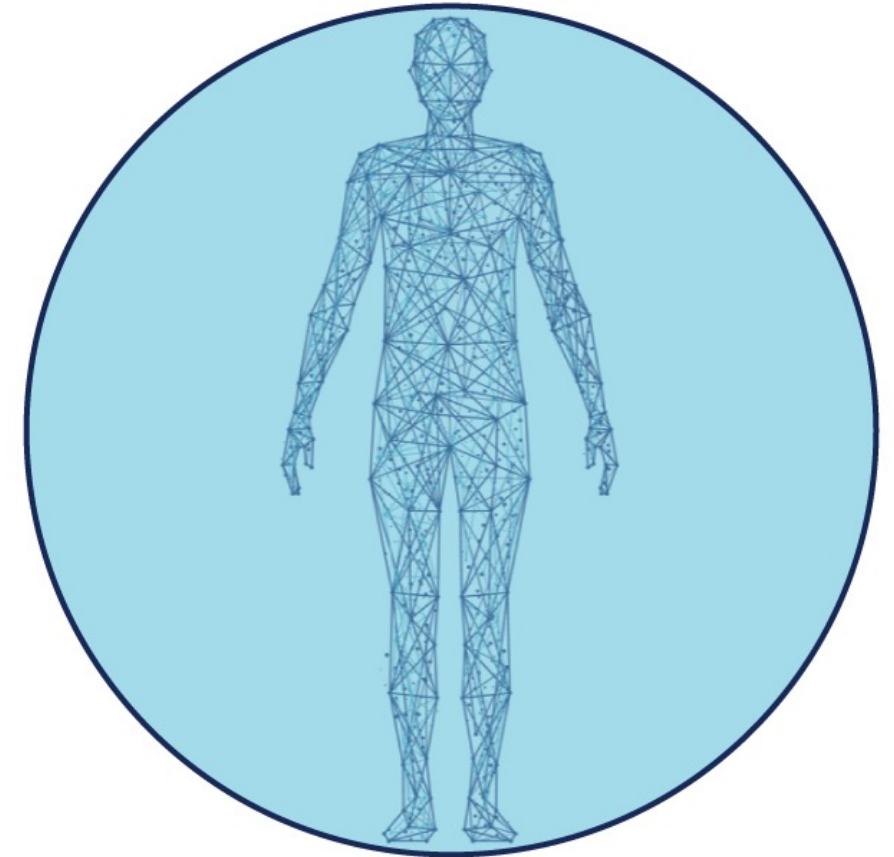


Long COVID symptoms in SARS-CoV-2-positive children aged 0–14 years and matched controls in Denmark (LongCOVIDKidsDK): a national, cross-sectional study

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Selina Kikkenborg Berg, Pernille Palm, Ulrikka Nygaard, Henning Bundgaard, Maria Nivi Schmidt Petersen, Siri Rosenkilde, Anne Bonde Thorsted, Annette Kjær Ersbøll, Lau Casper Thygesen, Susanne Dam Nielsen, Anne Vinggaard Christensen



COVID-19 in Denmark

- First confirmed case of SARS-CoV-2 in late February 2020.
- First lockdown of daycare facilities and schools etc. in March 2020.
- From May 2020 open public testing was available to all including citizens without symptoms of SARS-CoV-2.
- LongCOVIDKidsDK survey in July 2021 where most restrictions were lifted.



Objective

To investigate:

- the prevalence of long-lasting symptoms
- the duration and intensity of symptoms
- quality of life, psychological and social outcomes in children aged 0–14 years who had been infected with SARS-CoV-2 compared to controls with no history of SARS-CoV-2 infection.



Methods

- Nationwide cross-sectional study including all children with a confirmed SARS-CoV-2-positive PCR test (cases) and matched controls.
- A survey was sent to mothers (proxy reporting) of all Danish children aged 0–14 years.
- Questionnaire included 23 most common long COVID symptoms and Pediatric Quality of Life Inventory (PedsQL).



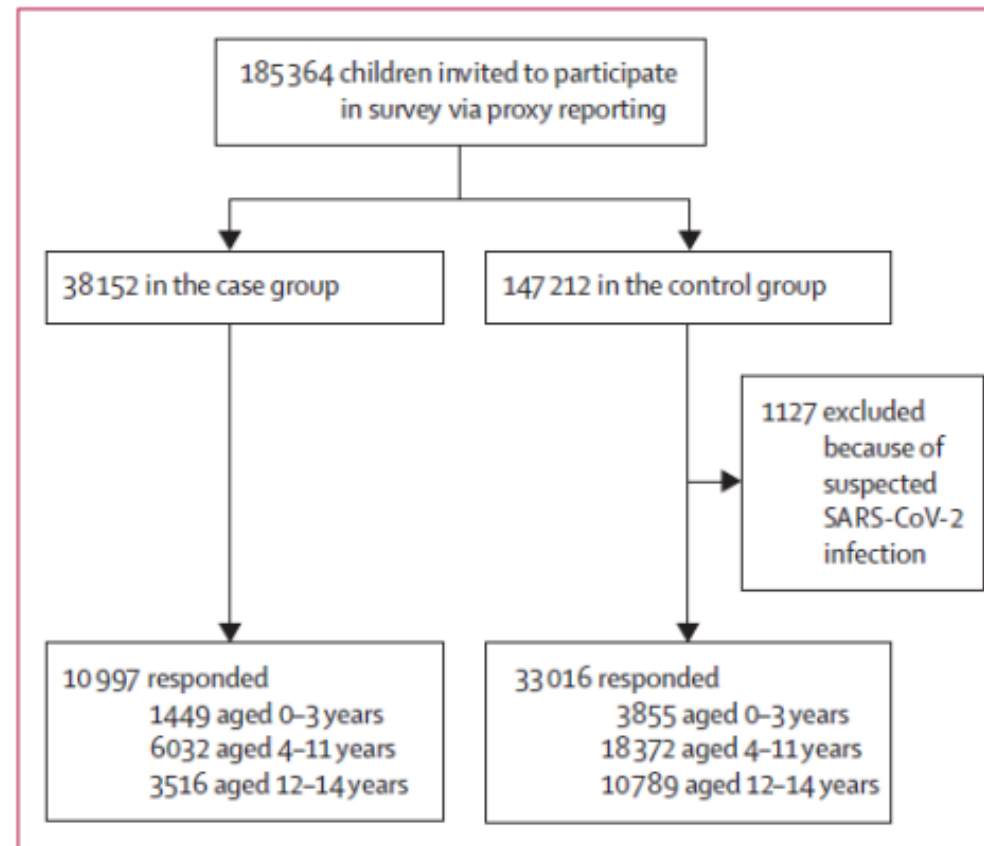
Definition of long COVID

We used the WHO clinical case definition of post-COVID-19 condition in adults as:

- *persistent or fluctuating symptoms with an influence on daily functioning following SARS-CoV-2 infection for at least 2 months that cannot be explained by an alternative diagnosis.*

WHO. A clinical case definition of post COVID-19 condition by a Delphi consensus, 6 October 2021.

Results – Response rate



Results - At least one symptom lasting more than two months (cases vs. controls)

0-3 years

40.0% vs. 27.2%; OR 1.78 [95% CI 1.55–2.04], $p < 0.0001$

4-11 years

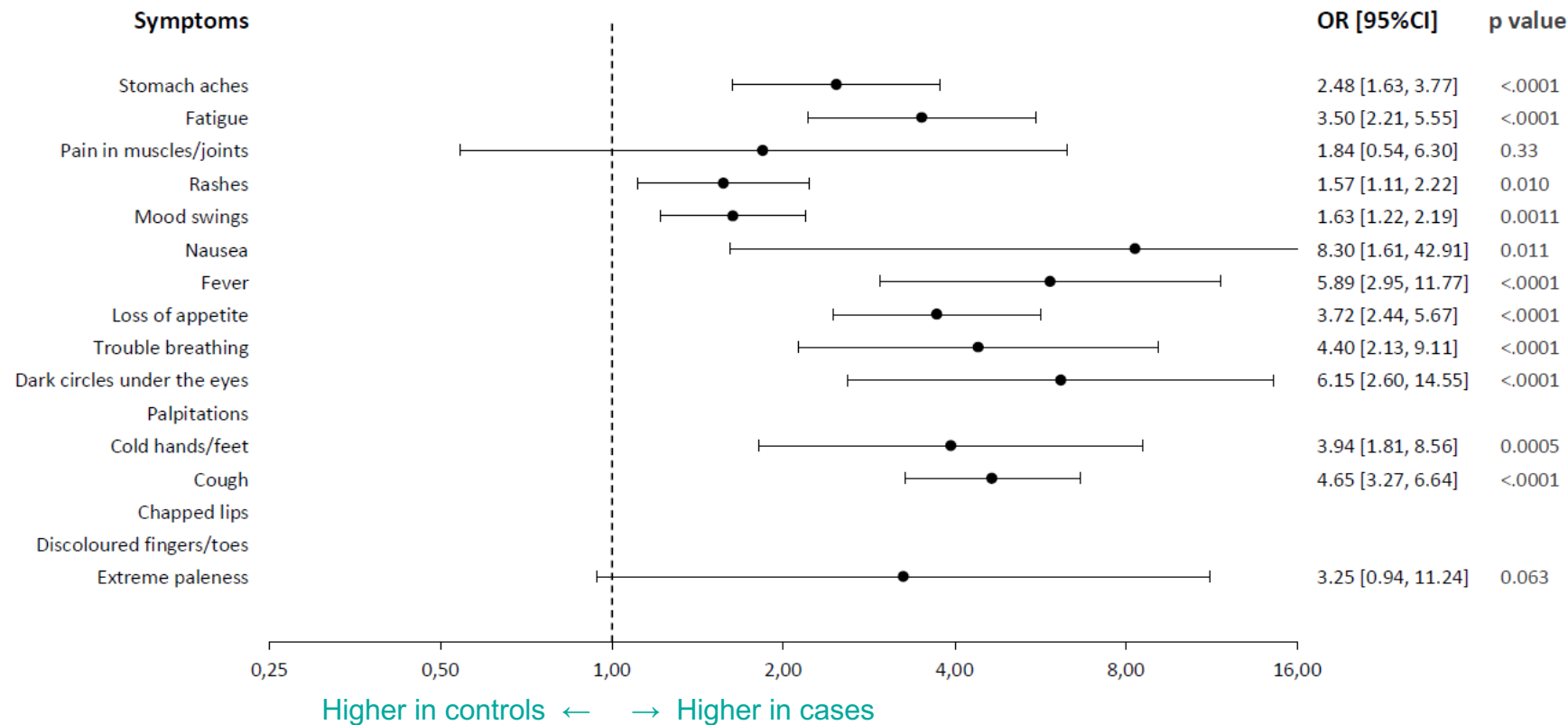
38.1% vs. 33.7%; OR 1.23 [95% CI 1.15–1.31], $p < 0.0001$

12-14 years

46.0% vs. 41.3%; OR 1.21 [95% CI 1.11–1.32], $p < 0.0001$

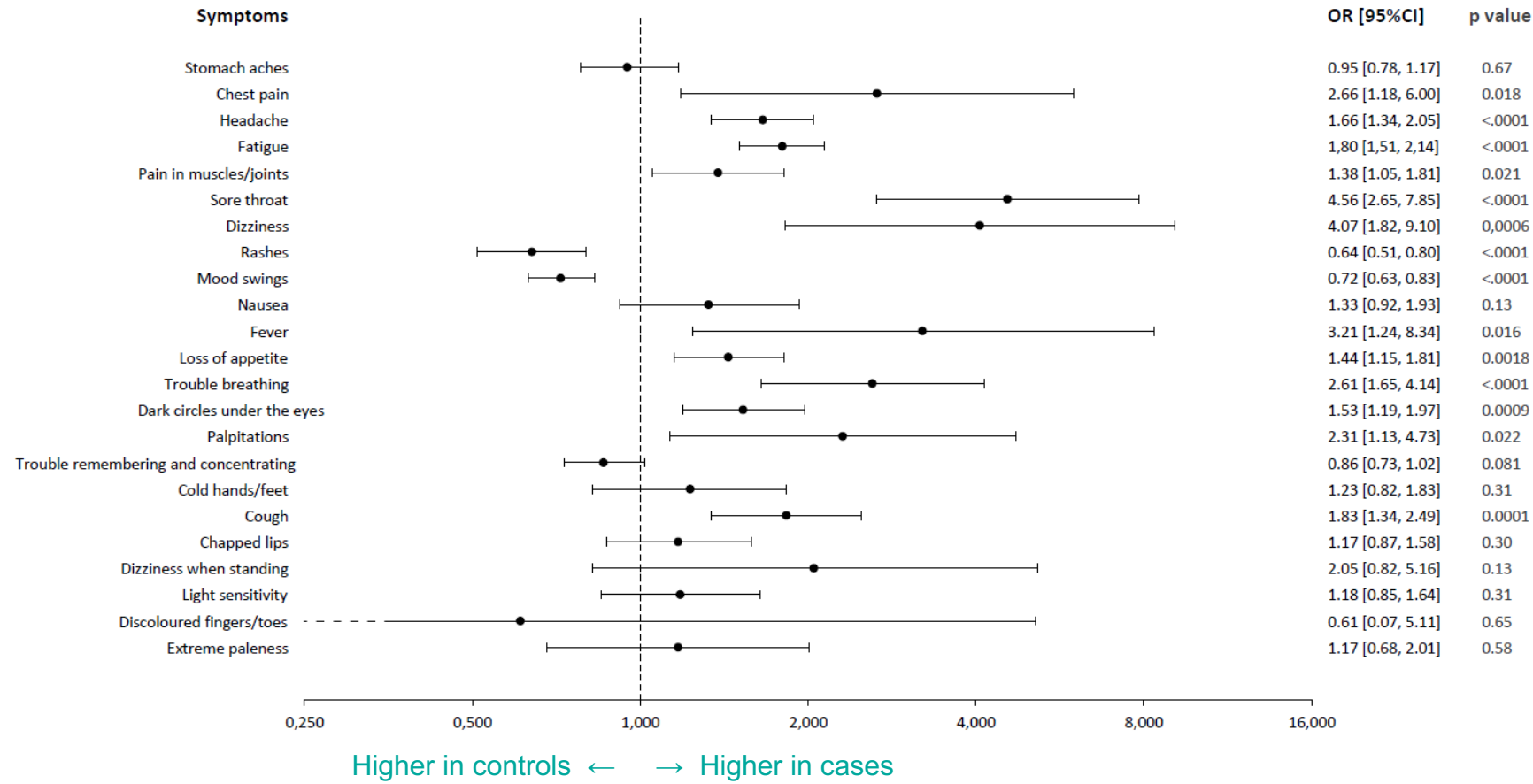
Results – Odds of reporting symptoms in cases vs. controls

0-3 years



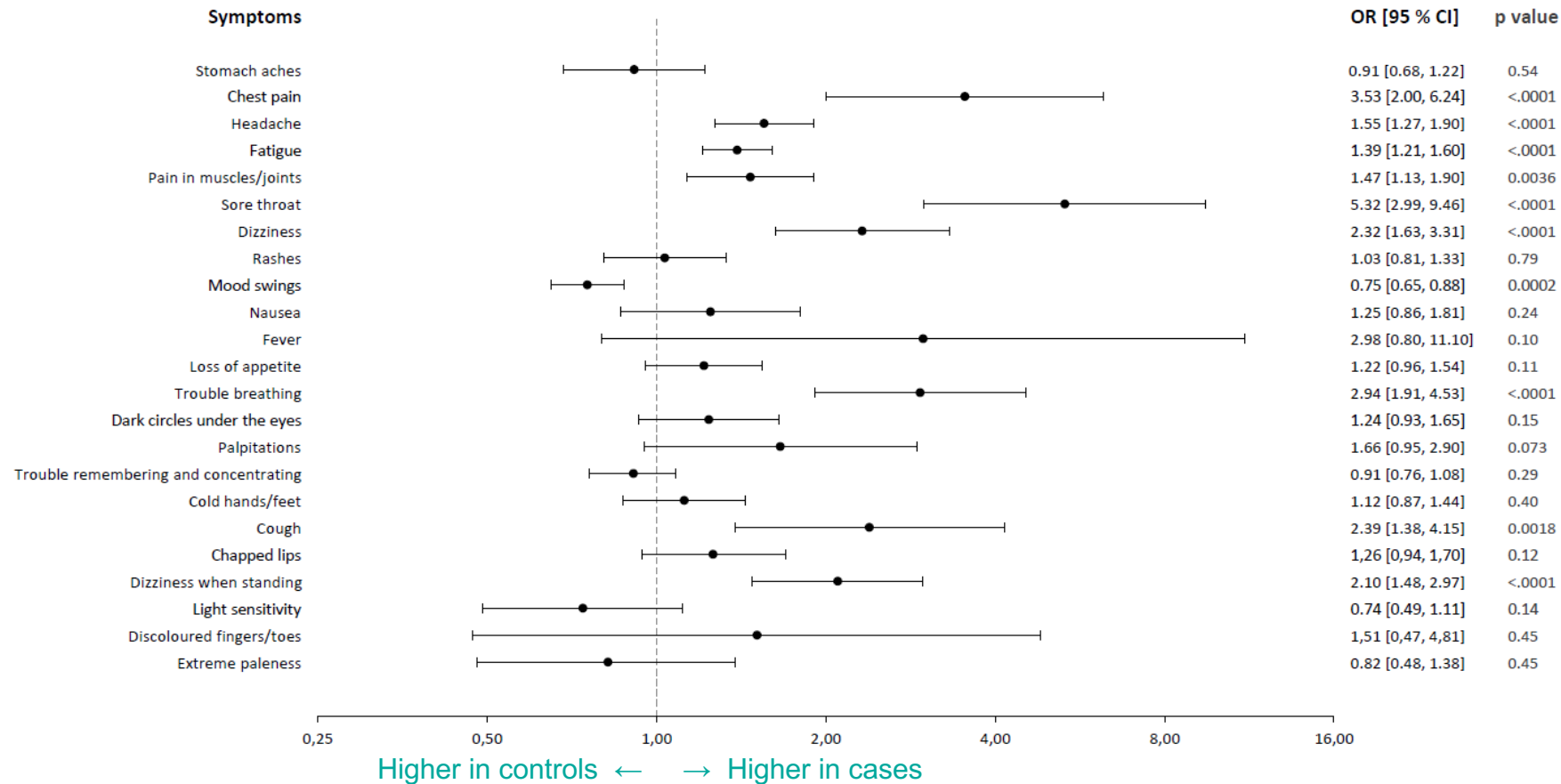
Results – Odds of reporting symptoms in cases vs. controls

4-11 years



Results – Odds of reporting symptoms in cases vs. controls

12-14 years



Results – Duration of symptoms in cases

0-3 years Stomach aches

	At least 2 months	At least 3 months	At least 6 months	At least 9 months
	Cases	Cases	Cases	Cases
Total n	1,194	1,194	899	167
Stomach aches, n (%)				
Almost never and Sometimes	77 (6.4)	62 (5.2)	35 (3.9)	7 (3.0)
Often and Almost always	40 (3.3)	34 (2.8)	15 (1.7)	0

4-11 years Headache

	At least 2 months	At least 3 months	At least 6 months	At least 9 months
	Cases	Cases	Cases	Cases
Total n	5,023	5,023	3614	628
Headache, n (%)				
Almost never and Sometimes	486 (9.6)	439 (8.7)	281 (7.8)	37 (5.9)
Often and Almost always	126 (2.5)	115 (2.3)	79 (2.2)	14 (2.2)

12-14 years Trouble breathing

	At least 2 months	At least 3 months	At least 6 months	At least 9 months
	Cases	Cases	Cases	Cases
Total n	2,857	2,857	2,367	494
Trouble breathing, n (%)				
Almost never and Sometimes	108 (3.8)	91 (3.2)	69 (2.9)	11 (2.2)
Often and Almost always	37 (1.3)	35 (1.2)	21 (0.9)	5 (1.0)

Results – Emotional and social functioning

PedsQL Emotional functioning:

4-11 years: median score 80.0 [IQR 65.0–95.0] in cases vs. 75.0 [60.0–85.0] in controls, $p < 0.0001$

12-14 years: 90.0 [70.0–100.0] vs. 85.0 [65.0–95.0], $p < 0.0001$

PedsQL Social functioning:

12-14 years: 100.0 [90.0–100.0] vs. 95.0 [80.0–100.0], $p < 0.0001$

Results – Psychological outcomes

Worried about what
will happen to me

Others don't want
to be friends

Teased



Trouble being
with peers

Trouble sleeping

Sad

Scared

Perspectives

- Our results show more long-lasting symptoms among children with previous SARS-CoV-2 infection and adds new knowledge about the youngest children –pointing at long COVID.
- The study also finds many symptoms among controls with worse social and emotional status -pointing at “pandemic symptoms”.
- We also looked into adolescents (15-19) years and found the similar differences between groups, however more symptoms among girls.
- Represents the parents’/children’s own perception of symptoms.
- Important basis for understanding this new condition long COVID as well as “pandemic symptoms”.
- Next: Symptom clusters – variants – vaccine effects – prevention and treatment of long COVID.

Thank you for your attention



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