Understanding the complex impact of the Covid-19 pandemic on children with overweight and obesity: a comparative ecological analysis of parents' perceptions in three countries
- STOP Project WP8 -

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Background: The Covid-19 pandemic has changed children's eating and physical activity behaviours. These changes have been positive for some households and negative for others, revealing health inequalities that have ramifications for childhood obesity. This study investigates the pandemic's impact on families of children aged 2–6 years with overweight or obesity.

Methods: Drawing on interviews conducted as part of a randomised controlled trial (RCT) for childhood obesity, thematic analysis was used to examine how parents of pre-schoolers perceived changes in their eating, screentime and physical activity behaviours between the first and second waves of Covid-19.
Parents/ caregivers (n=70, representing 68 families) were interviewed twice during a period of 6 months in three countries with markedly different pandemic policies – Sweden, Romania, and Spain.
The analysis is informed by Bronfenbrenner's ecological systems theory, which embeds home- and school-based influences within societal and policy contexts. The ecological tabulation highlighted the micro (child, family, school, afterschool systems), meso (relationships between these systems), exo (changes parents experienced that did not directly relate to the children), and macro (policy and socioeconomic conditions) levels.

Results: The sample's characteristics are described in the Table, in total and by study site. In Sweden, the interviews were on average conducted 6.3 months apart (5.3 to 7.2 months). In Romania, 7.8 months (6.4 to 10.8 months) and in Spain 6.1 months (5.8 to 6.4 months). More fathers were interviewed in the Swedish sample and more of the Swedish families had a foreign background (i.e., the parent having been born in another country) as compared to both Romania and Spain.

	All	*Sweden*	*Romania*	*Spain*
Families	*n = 78*	*n = 23*	*n = 25*	*n = 30*
Person interviewed, first interview, *n (%)*				
Mother	63 (81)	13 (56)	21 (84)	29 (97)
Father	9 (12)	8 (35)	–	1 (3)
Both parents	2 (3)	2 (9)	–	–
Other person	4 (5)	–	4 (16)	–
Person interviewed, second interview, *n (%)*	*n = 68*	*n = 20*	*n = 23*	*n = 25*
Mother	53 (12)	11 (55)	19 (83)	23 (92)
Father	8 (78)	7 (35)	–	1 (4)
Both parents	2 (3)	2 (10)	–	–
Other person	5 (7)	–	4 (17)	1 (4)
Child				
Gender (girl), *n (%)*	47 (60)	15 (65)	13 (52)	19 (63)
Age at interview 1 (years), *mean (SD)*	5.5 (1.3)	4.8 (1.2)	5.8 (1.0)	5.7 (1.5)
Interview 1				
Child weight and height measures, derived within ±4 months of the interview at, *n (%)*	*n = 67*	*n = 22*	*n = 25*	*n = 20*
Baseline or close to treatment start	9 (14)	9 (41)	–	–
After three to six months of treatment	23 (34)	6 (27)	10 (40)	7 (35)
After nine to 11 months of treatment	27 (40)	7 (32)	11 (44)	9 (45)
After 15 months of treatment	4 (6)	–	–	4 (20)
Measured outside the study - had not received treatment	4 (6)	–	4 (16)	–
Weight status, *n (%)*				
Normal weight	1 (2)	–	1 (4)	–
Overweight	10 (15)	6 (27)	2 (8)	2 (10)
Obesity	25 (37)	9 (41)	9 (36)	7 (35)
Severe obesity	31 (46)	7 (32)	13 (52)	11 (55)
BMI z-score, *mean (SD)*	3.1 (1.1)	2.7 (0.8)	3.1 (1.3)	3.4 (1.0)
Interview 2				
Child weight and height measures, derived within ±4 months of the interview, *n (%)*	*n = 59*	*n = 20*	*n = 23*	*n = 16*
After three to six months of treatment	8 (13)	6 (30)	2 (9)	–
After nine to 11 months of treatment	21 (35)	8 (40)	6 (26)	7 (44)
After 15 to 17 months of treatment	23 (38)	6 (30)	11 (48)	6 (38)
After 21 months of treatment	4 (7)	–	–	3 (19)
Measured outside the study - had not received treatment	4 (7)	–	4 (17)	–
Weight status, *n (%)*				
Normal weight	3 (5)	1 (5)	2 (9)	–
Overweight	8 (14)	6 (30)	1 (4)	1 (6)
Obesity	19 (32)	9 (45)	9 (39)	1 (6)
Severe obesity	29 (49)	4 (20)	11 (48)	14 (88)
BMI z-score, *mean (SD)*	3.0 (1.0)	2.5 (0.9)	2.9 (1.1)	3.5 (0.8)
Change in BMI z-score between interview 1 and 2, *mean (SD)*	- 0.06 (0.7)	- 0.1 (0.6)	- 0.2 (0.7)	0.18 (0.5)

Four themes were developed through qualitative longitudinal analysis:
(1) Children's diverging directions of behaviour change:

"The activity has increased because they do physical education at school, but before the pandemic, [the child] used to go dancing twice a week and we have not done this again." (M3001)

"My child no longer has that vitality of children…to play(…)" (M1068)

"The time spent in front of the screens is considerably more. But what I can say is that, since he attends online school, he seems to have developed a bit of a repulsion [towards the tablet] (…). He doesn't spend that much time with the tablet anymore." (M2003)

(2) Parents' responses to the pandemic:

"We try to avoid white bread, and homemade bread, because last spring, we started making bread at home and it smelled all over the house and she was eating almost the entire bread core on her own." (M2014)

"It is very hard to handle. He has constant cravings for something [to eat](…)" (M1063)

"…we still walk to the school and back, or ride a bike or a kick-bike or something like that and I think that because both I and (partner's name) work from home, we also have a great need to get out on the weekends. So maybe we are out a little more due to Corona because you feel like you have a need to be outside more (…)." (M1005)

(3) Emotional and social resources:

"Our family life has been greatly affected in several aspects: emotional, eating behaviour and many others. We got isolated. We didn't interact with others physically; we have just stayed in the family. We struggle with the online school, we aren't going anywhere." (M2014)

"It is not easy to stay non-stop with the child at home, neither for the child, nor for the adults; at a certain moment my little girl said to me 'mother I am tired of you, I love you madly, but I am tired of you, I want to do something else'." (M2014)

(4) Household resilience:

"It influences in a positive way. Because this way we all spend more time together, the family environment is much better, we go out together and do everything as a family. On the subject of food, I am still in control." (M3051)

"… now we are home for long days, he is whiny, he wants to go to kindergarten, he cannot. So, it's really hard. So, he asks for something to eat, right… I try to avoid as much as possible, but some days, it gets too annoying, and I do [give in]. No. And I don't have the energy." (M1063)

The findings show that, although all participants were recruited from an RCT for families of children with excess weight, they reported different responses to the pandemic's second wave, with some children engaging in healthier eating and physical activity, and others engaging in comfort eating and a more sedentary lifestyle.
Notably, differences in children's obesity-related behaviours were closely related to differences in parents' feeding and physical activity facilitation practices, which were, in turn, linked to parents' emotional and social wellbeing. Moreover, across all study sites, despite differences in national policy, parents' feeding, and physical activity facilitation practices as well as their emotional and social wellbeing were embedded in household resilience. In resilient households, where parents had secure housing and employment, they were better able to adapt to the challenges posed by the pandemic and the policy responses to it, whereas parents who experienced household insecurity found it more difficult to cope. The findings suggest that, as childhood obesity treatment programs adapt to the Covid-19 pandemic, the advice provided to parents should take into account differences between the capabilities of households in responding to the challenges posed by the pandemic and policy measures that address it. Of note, while mentions of household resilience in the childhood obesity literature have exclusively been in relation to food security, our study suggests that household resilience impacts on childhood obesity via the management of everyday insecurity not directly related to food, such as employment and clinical vulnerability.

Conclusions: Using an ecological approach, this study was the first to explore how parents perceived changes in their children's eating, physical activity and screen time behaviours between the first two waves of the Covid-19 pandemic in Romania, Spain and Sweden. As the Covid-19 pandemic is turning into a long-term public health challenge, studies that address household resilience are crucial for developing effective prevention and treatment responses to childhood obesity.

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