1. BACKGROUND
COVID-19 related lockdown measures have large impact on lifestyle behaviors and well-being of children (0-18y) from the general population.

2. AIM
To investigate impact of COVID-19 lockdown in children (0-18y) with severe obesity on
- Eating styles and behaviors
- Physical activity (PA)
- Health-related Quality of Life (HRQoL)

3. METHODS
We invited all (n=90) children under treatment at our academic obesity center, for this mixed-methods study
- 83 families completed questionnaires and 75 were interviewed
- Mean age: 11.5 ± 4.6 years
- Mean BMI SD score: 3.8 ± 1.0 (severe obesity)

4. RESULTS

**On group level:**

<table>
<thead>
<tr>
<th>Outcome during lockdown</th>
<th>Mean</th>
<th>Δ</th>
<th>p-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Restrained eating score</td>
<td>63.4 ± 33.8</td>
<td>+3.9</td>
<td>0.39</td>
</tr>
<tr>
<td>Emotional eating score</td>
<td>67.2 ± 32.9</td>
<td>+9.2</td>
<td>0.11</td>
</tr>
<tr>
<td>External eating score</td>
<td>68.5 ± 28.4</td>
<td>+0.3</td>
<td>0.57</td>
</tr>
<tr>
<td>Weekly PA time</td>
<td>7.2 ± 7.6 hr</td>
<td>-1.9 hr</td>
<td>0.02</td>
</tr>
<tr>
<td>Weekly screen time</td>
<td>18.0 ± 11.7 hr</td>
<td>-0.2 hr</td>
<td>0.65</td>
</tr>
<tr>
<td>PedsQL total score</td>
<td>65.4 ± 18.6</td>
<td>+3.0</td>
<td>0.51</td>
</tr>
</tbody>
</table>

**DATA-ANALYSIS SUBGROUPS**

**EATING STYLES AND BEHAVIORS**
- 26% ≥10 points increase in emotional eating
  - Older children, pre-existent psychosocial problems
- 24% ≥10 points increase in external eating
  - Younger children, signs of insatiable behavior
- 28% Increased demand for food
  - Attributed to loss of daily structure, increased stress
- 20% No change in eating behaviors
  - Attributed to pre-pandemic strict eating schemes

**PHYSICAL ACTIVITY**
- 51% Decrease in PA time to mean ≤ 2hr/wk
  - Older children, not fulfilling WHO PA criteria pre-pandemic

**HEALTH-RELATED QUALITY OF LIFE**
- 42% Clinically relevant low PedsQL total score (<p60)
  - Pre-existent psychosocial problems

PedsQL total score negatively related to:
- Emotional eating score (β=−0.28, p=0.001)
- External eating score (β=−0.29, p=0.002)
- NOT related to PA or screen time

5. CONCLUSION
Differential response profiles to COVID-19 measures

**On group level:**
- Dramatic decline in physical activity (51% of children ≤ 2hrs/wk during lockdown)
- Unchanged screen time, eating styles, HRQoL
- Pre-pandemic strict schedules seemed protective

A substantial minority of families reported deteriorated eating behavior and emotional wellbeing

WHO ARE MOST AT RISK?
- Young children: increased external eating
- Older children: increased emotional eating
- Older children: decreased physical activity
- Not fulfilling WHO PA criteria pre-pandemic
- COVID-19 related anxiety
- Pre-existent psychosocial problems
- High external/ emotional eating

THESE SUBGROUPS ASK FOR EXTRA SUPPORT TO MINIMIZE IMPACT OF COVID-19 LOCKDOWN MEASURES