User experiences of wearable activity monitor among 3-6-year old preschool children – Are children willing to wear monitor 7 days 24 hours per day?

Suvi Määttä, Reetta Lehto & Eva Roos on the behalf of the DAGIS research, Folkhälsan Research Centre, Finland
The DAGIS study

• The aim: to study socio-economic inequalities in preschool children’s health behaviors (3-6 years)

• Cross-sectional survey in autumn 2015, 54 preschools, appr. 700 children

• Estimated drop-off 20%
The protocol

- Actigraph wGT3X-BT was set on children’s waist in preschool by research assistants
- Written introductions with diary for parents
- Recommended wear time: 7 days, 24 hours
- For the analyses: preschool hours vrs. out-of-preschool hours
- Non-wear time: 10 or more consecutive minutes of zero counts
Activity data (N=708)

Day1: 86% valid cases, 14% missing cases
Day2: 90% valid cases, 10% missing cases
Day3: 89% valid cases, 11% missing cases
Day4: 89% valid cases, 11% missing cases
Day5: 88% valid cases, 12% missing cases
Day6: 88% valid cases, 12% missing cases
Day7: 87% valid cases, 13% missing cases
The most common reasons not to wear

<table>
<thead>
<tr>
<th>Reason</th>
<th>Percentage</th>
<th>Number of Children</th>
</tr>
</thead>
<tbody>
<tr>
<td>The later start for the use of device</td>
<td>5%</td>
<td>36 children</td>
</tr>
<tr>
<td>Quit</td>
<td>3.7%</td>
<td>26 children</td>
</tr>
<tr>
<td>Sick</td>
<td>4.4%</td>
<td>33 children</td>
</tr>
<tr>
<td>Did not want use it</td>
<td>2%</td>
<td>13 children</td>
</tr>
<tr>
<td>Incomplete diary</td>
<td>3.6%</td>
<td>26 children</td>
</tr>
<tr>
<td>Missing diary</td>
<td>3%</td>
<td>22 children</td>
</tr>
</tbody>
</table>
Valid hours for analyses (N=708)

- Over 8h/4days: 88%, N=623
- Over 10h/4 days: 87%, N=616
- Over 10h/5 days: 84%, N=595

Non-compliance

Compliance
Sleep (N=708)

<table>
<thead>
<tr>
<th>Night</th>
<th>0%</th>
<th>10%</th>
<th>20%</th>
<th>30%</th>
<th>40%</th>
<th>50%</th>
<th>60%</th>
<th>70%</th>
<th>80%</th>
<th>90%</th>
<th>100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Night 1</td>
<td>7%</td>
<td>13%</td>
<td>80%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night 2</td>
<td>4%</td>
<td>12%</td>
<td>84%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night 3</td>
<td>4%</td>
<td>12%</td>
<td>84%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night 4</td>
<td>3%</td>
<td>11%</td>
<td>86%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night 5</td>
<td>3%</td>
<td>12%</td>
<td>85%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night 6</td>
<td>3%</td>
<td>12%</td>
<td>85%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Night 7</td>
<td>3%</td>
<td>12%</td>
<td>85%</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Legend:
- **not in use**
- **missing cases**
- **valid cases**
Valid hours for analyses

- 86% children (N=608) had at least 4 nights
- 9% of children did not worn device at all worn during nights (the children who quit excluded)
Qualitative feedback

• Optional feedback in diaries:
  – Child liked to wear it. Child considered it as superman belt.
  – Child felt that accelerometer was heavy during sleep.
  – Child considered that blinking light was fun.
  – The blinking light disturbed sleeping, it was too bright.
Conclusions

- Majority of children were willing to wear the accelerometer.

- To get enough valid days for analyses, it might be necessary to provide the possibility for 7 days wearing.
Thank you!

This study was financed by Samfundet Folkhälsan, University of Helsinki, Ministry of Education and Culture in Finland, Juho Vainio Foundation, Signe and Ane Gyllenberg Foundation and Medicinska Understödsföreningen Liv och Hälsa r.f.

More about the DAGIS study:
www.dagis.fi
Twitter: @DAGISresearch
Facebook: DAGISresearch