Introduction

- The PortionSize® app (Figure 1) estimates dietary intake using embedded templates in real-time and provides immediate feedback.
- PortionSize also sends food images to a server where they can be analyzed using the Remote Food Photography Method (RFPM).
- The RFPM accurately measures energy intake (EI); however, it requires human raters to analyze food images; therefore, the RFPM does not provide immediate dietary feedback.

Objective

- To compare the validity of EI estimates from PortionSize and the RFPM to weighed meals (WM).

Methods

Inclusion criteria:
- Age: 18-65 years
- Body Mass Index (BMI): 18.5 to 45 kg/m²

Exclusion criteria:
- Eating disorder
- Serious mental illness
- Pregnant women or breastfeeding mothers

Recruitment
- Advertisement on PBRC website and Facebook
- Distribution of study flyers

Procedures
- Phone and in-person screening
- ~1.5-hour study visit at PBRC
- Demographics questionnaire and anthropometric measurements (height and weight)
- PortionSize app training and food intake estimation
- Trained staff analyzed food images to estimate EI

Statistical methods (equivalence testing)
- Two One-sided T-test (+/-25% equivalence bounds)

Results

Table 1: Comparison of energy intake (kcal) estimation (n = 15 meals)

<table>
<thead>
<tr>
<th></th>
<th>Mean±SD</th>
<th>Equivalence at ±25%</th>
<th>Mean Percent Error</th>
</tr>
</thead>
<tbody>
<tr>
<td>PortionSize (PS)</td>
<td>743±328</td>
<td>0.18</td>
<td>12.7</td>
</tr>
<tr>
<td>Weighed Meals (WM)</td>
<td>659±191</td>
<td>0.16</td>
<td>12.6</td>
</tr>
<tr>
<td>RFPM</td>
<td>660±196</td>
<td>&lt;0.0001</td>
<td>0.2</td>
</tr>
</tbody>
</table>

Figure 1: The PortionSize app and procedures of food intake estimation

Conclusion

- The RFPM accurately estimates EI but requires a human rater and is not easily scalable.
- Though not equivalent to weighed values, PortionSize’s mean error was ~12.5% and improvements to the app and method could improve these estimates.
- Improvements to make the PortionSize app more accurate and scalable are ongoing. This present study warrants future well-powered trials.

References


Acknowledgements