Just Fun and Games?

Mobile apps for pediatric obesity prevention and treatment, healthy eating and physical activity promotion

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Background

- Approximately 1 in 3 children in the U.S. is overweight or obese
- At greater risk for health complications and future weight gain

Background

- Experts have used a variety of settings to intervene on child obesity prevention and treatment, including:
  - Clinics
  - Homes
  - Schools
  - Daycares
  - Media campaigns

- How can technology help?
Background

- iTunes: largest mobile application (app) repository

- App use growing—
  - Parents are heavy app users

Background

- Smartphone use among children and teens is growing
- Smartphones are used by a diverse population

Background

- No previous analyses of apps for children
- Gap in the evidence base on apps for children’s health promotion
- Few studies of content of apps for adults, including:
  - Weight loss
  - Tobacco cessation

Research Aims

- To analyze the content of commercially available apps for the prevention and treatment of pediatric obesity through:
  - weight loss
  - healthy eating (HE)
  - physical activity (PA)
- Determine if expert recommendations are used
## Expert Committee for Pediatric Obesity Prevention (ECPOP) 2007 Recommendations

### Intervention Strategies
- Calculate and plot BMI over time
- Assess motivation to make changes
- Use motivational interviewing
- Tailor strategies to specific case
- Set goals/limits
- Examine environmental influences
- Involve the whole family
- Combine multiple behavior changes

### Behavioral Targets
- Reduce sugar-sweetened beverages
- Consume ≥9 servings of fruits and vegetables/day
- Decrease TV time
- Eat breakfast every day
- Cook at home
- Eat together at the table
- Do ≥1 hour/day of PA

Methods: Descriptive Data

- Descriptive information on apps:
  - Price
  - User ratings
  - Use of gaming elements
  - Connection to social media
Identifying Apps for Analysis

- **Initial search for weight loss**
  - “children” / “kids” / “teen” / “family” AND “weight loss”
  - *Yielded (n=6)*

- **Broadened to include HE and PA**
  - *Yielded (n=158)*

- **Supplemental Google searches**
  - Same search terms as above with the addition of “iPhone apps”
  - *Yielded (n=7)*

- **Total, n=171 apps**
Identifying Apps for Analysis

N=171 apps
- Searches yielded, n=171 apps

N=61 apps
- Excluded from further analysis, n=110
  - not in English; content unrelated to weight loss/HE/PA; not targeting children/teens
  - Apps offering free and for-purchase versions rated as separate apps (n=9)

N=61 apps
- Reviewed further, n=61
  - Collected descriptive information about each app from iTunes store page
  - (n=4 apps), excluded at this point, as they were no longer available

N=57 apps
- Final analysis sample, n=57
  - Apps that fit initial inclusion criteria downloaded from iTunes
Results: Content Analysis

Content Focus of App

- Health Eating: 52.6%
- Physical Activity: 35.1%
- Healthy Eating & Physical Activity: 12.3%
Results: Content Analysis

- 61.4% (n=35) did not utilize any of the recommended strategies or behavioral targets
- Apps used a mean of 1.07±1.64 (range 0-6) recommendations
- Apps that focused on both HE and PA included the most recommendations (3.1±2.0)
Results: Content Analysis

- Most frequently used recommendations:
  - setting goals/limits (n=16)
  - reducing sugar-sweetened beverages (n=9)
  - increasing fruit and vegetable consumption (n=8)
## Results: Descriptive

<table>
<thead>
<tr>
<th>Descriptive Characteristics</th>
<th>Results</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average price</td>
<td>$1.05 \pm 1.66 (range: free--$9.99)</td>
</tr>
<tr>
<td>Average user rating for current version</td>
<td>3.9 \pm 0.8 out of 5 (based on n=27 apps) 38.8 \pm 52.0 (# user ratings)</td>
</tr>
<tr>
<td>Connect users with social media</td>
<td>5.8% (n=9)</td>
</tr>
<tr>
<td>Classified as games</td>
<td>56.1% (n=32)</td>
</tr>
</tbody>
</table>
Examples: GeoPalz

• Used 4 recommendations:
  ◦ calculate and track BMI over time
  ◦ involve the whole family
  ◦ set goals/limits
  ◦ get ≥ 1 hour physical activity/day
Examples: Smash Your Food

- Used 4 recommendations:
  - tailor strategies to specific case
  - involve the whole family
  - set goals/limits
  - reduce sugar-sweetened beverages
Results: Content Analysis

- Recommendations not used by any apps:
  - assess motivation to make changes
  - use motivational interviewing
  - focus beyond the individual
  - decrease TV time
  - eat breakfast every day
Discussion

- Overall lacking in expert-recommended strategies
- Missed opportunity for health promotion and disease prevention?
- Need for collaborative work:
  - Programmer and health promotion researchers
  - Empirical testing of apps/rating system for health apps
Acknowledgements

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  - Dr. Brie Turner-McGrievy
  - Dr. Sonya Jones
  - Dr. Sara Wilcox

- **To read more:**
Questions?