Informal vendors and the obesogenic food environment of an informal settlement in Nairobi, Kenya

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Outline

• Background
• Objective
• Methods
• Results
• Conclusions
Background
Food environments as drivers of dietary intake in informal settlements

- Limited access to foods outside of settlement
- Lack of resources for own food production (e.g., water, soil, space, tools)
Few attempts to describe food environments of informal settlements

- Small number of food environment studies in sub-Saharan Africa
- Unique challenges of measuring food environments in informal settlements

Geographic distribution of food environment studies in low- and middle-income countries

Turner et al. (2020) *Adv Nutr*
Objective

To characterize the food environment of an informal settlement in Nairobi, Kenya according to the obesogenic properties and spatial distribution of its food vendors.
Methods
Setting and Sample

**Study Site**
- Kibera
  - 5 km southwest of downtown Nairobi
  - Densely-populated
  - High unemployment
  - Limited access to basic services

**Sample**
- 524 food vendors
  - 15 July - 9 August 2019
  - Information collected:
    - GPS location
    - Vendor type
    - Foods* sold

*Includes foods and beverages
Categorization of Foods

- Type of food (27 categories)
- Obesogenic risk
  - Propensity to promote weight gain
  - NOVA classification system and approach developed by Kroll et al.
  - Each food classified as: 1) high- or low-risk and 2) protective or non-protective

<table>
<thead>
<tr>
<th>High-risk</th>
<th>Protective</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Ultra-processed foods</td>
<td>• Minimally-processed foods, except staples, dairy, poultry, and red meat</td>
</tr>
<tr>
<td>• Processed foods high in sugar, fat, or sodium</td>
<td>• Processed culinary ingredients, except sugar</td>
</tr>
<tr>
<td>• Raw sugar</td>
<td>• Processed foods low in sugar, fat, and sodium</td>
</tr>
</tbody>
</table>
Classification of Vendors

Obesogenic risk:
1. Low-risk, protective
2. Low-risk, non-protective
3. High-risk, protective
4. High-risk, non-protective

<table>
<thead>
<tr>
<th>Proportion of foods sold that were considered protective</th>
<th>Proportion of foods sold that were considered high-risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;1/3</td>
<td>≥1/3</td>
</tr>
<tr>
<td>Low-risk, non-protective</td>
<td>High-risk, non-protective</td>
</tr>
<tr>
<td>≥1/3</td>
<td></td>
</tr>
<tr>
<td>Low-risk, protective</td>
<td>High-risk, protective</td>
</tr>
</tbody>
</table>

60% - <1/3
20% - ≥1/3
Analyses

**Descriptive statistics**
- Summary of foods sold
  - Overall
  - By vendor type
  - By obesogenic risk category

**Geospatial analysis**
- Mapping of vendors
  - By vendor type
  - By obesogenic risk category
- Clustering according to obesogenic risk
  - Ripley’s univariate K analysis
Results
Vendor Characteristics

- 456 vendors with complete data
- Vendor type
  - 30% stands/tables, 29% kiosks, 17% market stalls, 13% hawkers, 12% restaurants
- Foods most commonly sold
  - Sweets/confectionary (29% of vendors), raw vegetables (28%), fried starches (23%), fruits (21%)
Obesogenic Risk

- Proportion of vendors classified as:
  - Low-risk, protective – 44%
  - Low-risk, non-protective – 16%
  - High-risk, protective – 6%
  - High-risk, non-protective – 34%

- Obesogenic risk varied by vendor type
  - 74% of hawkers and 65% of kiosks were high-risk, non-protective
  - 78% of stands/tables and 62% of restaurants were low-risk, protective
Spatial Distribution of Vendors
Clustering by Obesogenic Risk

- Mean distance (95% CI), in meters, to nearest vendor of same obesogenic risk category
  - Low-risk, protective: 26 (21, 31)
  - Low-risk, non-protective: 43 (30, 56)
  - High-risk, protective: 114 (88, 139)
  - High-risk, non-protective: 29 (25, 33)
- Significant clustering of vendors in all obesogenic risk categories, except high-risk, protective
Conclusions
Duality of Obesogenic and Non-Obesogenic Foods

• Considerable number of energy-dense, highly-processed foods alongside a large supply of nutrient-rich, minimally-processed foods

• Consistent with nutrition transition observed in low- and middle-income countries worldwide

• Highlights the need to ensure consistent access to health-promoting foods throughout informal settlements
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Questions?

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