

Assessment of dietary outcomes in food environment research: A barrier to policy and programs to support healthy eating?

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SUMMARY

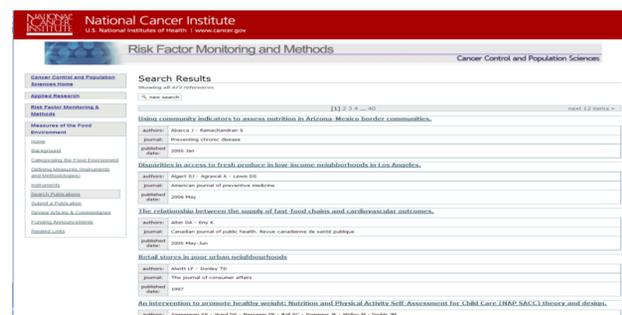
- **Purpose:** To evaluate approaches to assessing dietary outcomes within the field of food environment research.
- **Methods:** Review of studies published between January 2007 and May 2011, identified from the U.S. National Cancer Institute's Measures of the Food Environment website.
- **Results:**
 - Examination of 71 food environment studies that included at least one measure of dietary intake indicates a tendency toward the use of dietary assessment instruments with low cost and respondent burden at the expense of accuracy and precision.
 - Almost one in three studies made use of a screener and >15% used only 1-2 questions to assess dietary intakes.
 - About 30% of studies made use of a food frequency questionnaire.
 - More detailed methods, such as 24-hour recalls or records, were used in about one in five studies.
- **Conclusions:**
 - Measurement error in dietary intake data collected as part of food environment studies:
 - May be substantial, particularly if estimates are based on brief instruments and appropriate analytic methods are not employed.
 - May lead to spurious findings and reduced statistical power to detect relationships between features of food environments and diet.

BACKGROUND

- Significant growth in research examining the impact of food environment features on health outcomes, including obesity and diet.
- Difficult to draw conclusions from this literature due to methodologic differences among studies and lack of accuracy and precision in dietary measures.
 - Self-report dietary assessment data contain significant measurement error.
 - The type and extent of error and the effects on study results depend on the assessment instruments used and analytic methods employed.
- The aim of this study is to examine dietary measures used in food environment research.

METHODS

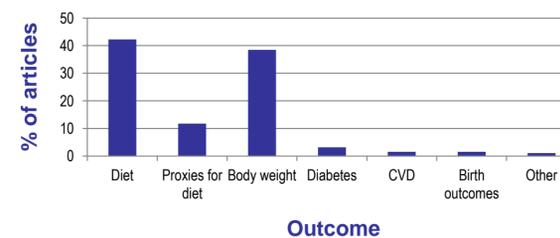
- Review of studies published between January 2007 and May 2011, identified through examination of the U.S. National Cancer Institute's Measures of the Food Environment website (riskfactor.cancer.gov/mfe).
 - Updated weekly using PubMed searches and key terms including food environment and food deserts.



RESULTS

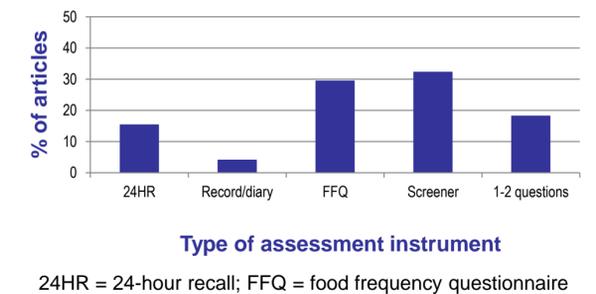
- 187 studies assessed a relationship between food environment features and a health outcome (Fig. 1).

Figure 1: Outcomes assessed in articles examining relationships between food environment features and health (n=187).



- 71 studies included at least one measure of dietary intake.
- Tendency toward the use of brief assessment instruments (e.g., screeners, 1-2 questions) that tend to be less expensive to administer and impose less respondent burden in comparison to more detailed methods (Fig. 2).

Figure 2: Type of dietary intake assessment instruments used in studies examining relationships between food environment features and diet (n=71).



- Little use of established techniques to calibrate data from brief instruments, such as screeners, to reduce error.
- The existence of extensive error in dietary intake data and the potential impact on study findings are rarely discussed.
- Common focus on 'indicator foods', such as fruits and vegetables or salty or sugary snacks, may hinder understanding of relevance of food environment to total diet.

DISCUSSION

- Tendency for food environment researchers to employ dietary assessment instruments that are low in cost and respondent burden at the expense of accuracy and precision.
- Error in intake data can:
 - Mask relationships that actually exist.
 - Reduce statistical power.
 - Result in spurious findings.

Barrier to environmental-level policy and program interventions to facilitate healthy eating.

RECOMMENDATIONS

- Use detailed and precise measures for all study variables, including dietary outcomes.
- Take advantage of technological advances to collect more detailed dietary data.
- Adopt techniques from other fields of nutrition to reduce and correct for measurement error in dietary data.



The authors thank Kevin Dodd and Victor Kipnis for their contributions to this review.