

## Annotation: Developing and Validating New Methods for Assessing Community Interventions

Measurement in epidemiologic studies is a critical methodological issue that has been highlighted in recent years.<sup>1</sup> Nutritional epidemiologists have made tremendous headway in this arena.<sup>2-5</sup> However, an understanding of how some methods behave in the context of a nutrition intervention is just beginning to emerge.<sup>6</sup> The article by Patterson et al.<sup>7</sup> in this issue of the *Journal* makes an important contribution in the approach to the assessment of diet and diet-related behaviors, particularly in relation to the evaluation of community-level nutrition programs. The pantry inventory measure they propose may be a more direct measure of program effectiveness than an individual-level assessment. This creative approach compels us to consider how we assess the nutritional environment and challenges us to reflect on the conceptual framework used to design and then evaluate community nutrition interventions.

Koepsell et al.<sup>8</sup> provided a thoughtful and complete exploration of similar issues in community-based health promotion and disease prevention programs. Their multilevel conceptualization of community-based programs requires the investigator to attend to the level of the analysis, from the choice of the measurement tool through the data interpretation. In community-based nutrition interventions, this means rethinking the tools we use for evaluation purposes, and exploring whether these tools are responsive to the changes brought about by the intervention.<sup>6,8-10</sup> This approach facilitates a more complete consideration of the process of intervention and the theory of the intervention.<sup>8</sup> From this starting point, one would seek to evaluate the intervention, using appropriate tools, across the multiple levels that compose the study (e.g., the individual, the household, the grocery store environment, the community, the food environment). Change in the community elicited by the intervention may be construed from aggregation of individual- or household-level outcome data, or may be more sensitively reflected by some environmental measure that typically allows the detection of early program effects and avoids the reactivity bias associated with self-reported behavior.<sup>8,11</sup>

Patterson et al.<sup>7</sup> set the stage for such a consideration through the novel use of a

pantry inventory to establish food availability at the household level. This approach broadens the scope of measurement in an important direction. While measures of consumption are important, a better understanding of the behaviors leading to consumption, especially in terms of barriers to and enablers of change, is critical for designing and evaluating a nutrition intervention. While we also need to know about biochemical indicators of nutritional status and consumption in understanding disease etiology, we need a better understanding of the context of eating habits if we are to know how to intervene to change these habits. Food acquisition, as reflected by a pantry inventory, is a step in the right direction. Patterson et al.<sup>7</sup> show that the availability of high-fat foods in the household is related to a demographic variable, a dietary behavior, a psychosocial construct, and dietary intake.

The ideas raised by Patterson et al. (which are also partly reflected in two other articles<sup>12,13</sup> in this issue) are timely. A recent request for applications from the Food and Consumer Service of the US Department of Agriculture called for proposals to explore "Methodology and Instrument Development for Evaluation of Nutrition Education Interventions" (FCS 96-019JIB, USFDA). Specifically, this request for applications emphasizes the development and validation of methods that are "sufficiently sensitive to detect behavioral change outcomes," while being of reasonable cost, of moderate burden to respondents, and appropriate for low-literacy individuals.

The development of new measurement approaches has been impeded by the "lack of persistent, credible efforts to assess and improve the validity and reliability of candidate measures."<sup>11</sup> Validation is the process of determining whether a method is suitable for providing useful analytical measurement for a given purpose and context. The validation process includes several considerations for a candidate method: construction well-grounded in theory; performance consistent with that theory; precision, dependability, and accuracy within specified performance standards; as well as accuracy attributable to the well-grounded theory for a given purpose and context. For community programs, the purpose is

to detect changes in biomedical outcomes, behavior, antecedent variables, or proximal effects in the context of interventions intended to cause or promote change.<sup>14</sup> Both Contento et al.<sup>14</sup> and the US Department of Agriculture's request for applications strongly encourage broad and innovative thinking about what methods might provide useful measurements that can be adopted in the evaluation of interventions.

Validation studies are very often difficult. For example, in order to demonstrate the accuracy of a new method, a comparison must be made with a criterion method that provides more definitive measures of the phenomenon of interest.<sup>15</sup> A particular limitation with methods for assessing change that is due to intervention has been the absence of such a criterion method for definitively measuring change. Some investigators prize biochemical methods for the purpose, but problems with such methods often render them unsuitable as a criterion.<sup>8</sup> Two recent studies demonstrate other approaches are possible.<sup>16,17</sup>

With regard to well-grounded theory, a new method first requires research directed to the specific issue. For community interventions, in-depth qualitative research has proved valuable. Thorough understanding of people living in their natural world requires careful, thoughtful, and persistent observation. Such observation allows one to grasp and construct meaning from the complicated realities that people experience.<sup>18</sup> For example, the development of measures of hunger and food insecurity illustrate the value of qualitative research and its potential contribution to considerations of validity. For this ill-understood phenomenon, a naturalistic approach through in-depth interviews was chosen to conceptualize and construct a grounded theory from the experience of people who were affected by it.<sup>19,20</sup> The resulting measurement items indeed adopted the language such people used to describe their experience.

In brief, new approaches are needed for evaluating community-based interventions, including nutrition interventions.<sup>8,11,14</sup> For new methods to be cred-

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**Editor's Note.** See related articles by Patterson et al. (p 272), Retzlaff et al. (p 181), and Sloan et al. (p 186) in this issue.

ible for a given purpose and context, validity must be demonstrated. Validity is achieved by careful construction and is assessed by quantifying reliability and accuracy. Quantifying accuracy requires the availability of definitive criterion measures. Creative thinking can result both in the development of novel methods and in the means for assessing their validity. □

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**Annotation: The Importance of Transitional Care in Reducing Homelessness**

The beautifully written paper by Susser et al. in this issue of the Journal<sup>1</sup> gives preliminary evidence of an effective intervention for a category of patient often written off from the ambit of psychiatric services: mentally ill homeless men. It shows that brief and focused transitional care can substantially reduce homelessness during and after the intervention period. In this annotation, I shall discuss three important aspects of the paper: the significance of the public health question addressed, the potential generalizability of the model, and the possible active ingredients that render a “critical time” intervention (CTI) efficacious.

First, the study takes one of the most difficult-to-treat groups of psychiatric patients: homeless mentally ill men, over half of whom have comorbid substance misuse. They suffer from both severe and multiple pathology and make frequent use of emergency health, social care, and law enforcement agencies. Nevertheless, these men are often excluded from mainstream

services as they do not comply with usual expected help-seeking behavior. They do not consult when not well; they may not take treatment as prescribed, and often they do not continue to attend treatment. In short, they often fail to display the set of motivated behaviors expected by staff.

The more important exclusion of such patients, however, is from the imagination of those delivering mental health services; such patients tend to be seen as outside the bounds of their proper remit. Traditional services may use a number of criteria with which to disqualify such patients from access: disturbed behavior, failure to attend appointments, or concurrent dual morbidity. For staff, there may be few incentives to maintain treatment contact.

Unless a system-level imperative exists—for example, services dedicated to this client group—then each separate service component can withdraw on locally plausible grounds. A key point of this paper is that there may exist a

straightforward intervention that rewards staff members as they see their patients improve and that legitimates contacts with this specific group.

The second main implication of this paper is the extent to which CTI can be generalized to routine practice elsewhere. Several key features add to its feasibility: first, the intervention is for a limited and short time period, so that it is relatively inexpensive; second, it is a systematized approach that is codified within the training manual; and third, the effects appear to persist beyond the end of the intervention, a feature that is rare within the lexicon of community treatments. Indeed, the results after discontinuation of assertive home treatment (in Madison, Wisc,<sup>2</sup> and London,<sup>3</sup> for example) show a disappointing return to pretreatment levels of symptomatology and social functioning after the interventions are withdrawn.

**Editor’s Note.** See related article by Susser et al. (p 256) in this issue.