Report

What Does Evidence-Based Mean for Nutrition Educators? Best Practices for Choosing Nutrition Education Interventions Based on the Strength of the Evidence

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ABSTRACT

Funding agencies and professional organizations are increasingly requiring community-based nutrition education programs to be evidence-based. However, few nutrition education interventions have demonstrated efficacy, particularly for interventions that address the outer layers of the socioecological model (ie, organizational, community, and public policy). This article reviews the types of evidence available to assess the likelihood that a given intervention will deliver the desired outcomes and how these types of evidence might be applied to nutrition education, and then suggests an approach for nutrition educators to evaluate the evidence and adapt interventions if necessary.

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INTRODUCTION

Nutrition education is a longstanding strategy for bringing food choice practices into alignment with positive health outcomes.[1] Community-based nutrition education has the potential to improve diet quality, food security, and public health.[2-4] Nutrition education includes practices beyond the direct education of learners, as outlined in the current definition:

> *Any combination of educational strategies, accompanied by environmental supports, designed to facilitate voluntary adoption of food choices and other food- and nutrition-related behaviors conducive to health and well-being and delivered through multiple venues.*
>
> (Contento[4])

This is consistent with the understanding that the various layers of the socioecological model, including family, organization, community, and public policy, work together to influence choices individuals make.[1]

Nutrition education researchers focus on developing interventions and building evidence that they are effective. In turn, nutrition practitioners look for effective interventions to implement in ongoing programs. Yet a discrepancy exists between the critical need for effective, community-based nutrition education and the scientific evidence needed to guide and inform the specific interventions these programs employ.[5] The number of nutrition education interventions that have demonstrated efficacy—for obesity prevention, for example—is sparse,[6] particularly for interventions that address policy, systems, and environmental changes. This is important because behavior change as a result of nutrition education may not be sustained without policy, systems, and environmental changes to support it.

The importance of evidence for effectiveness and the limited number of such interventions was emphasized with the passage of the Healthy, Hunger Free Kids Act of 2010, which required nutrition education programs funded under the legislative authority of the Act to be evidence-based.[7] The *Nutrition Education and Obesity Prevention Grant Program*, also known as *Supplemental Nutrition Assistance Program–Education*, is currently the largest nutrition education program nationally and was directly affected by this legislation. Consequently, it is a prime example of a program in which the requirement for evidence-based interventions is front and center.[8-10] This emphasis has had a spillover effect on other community-based nutrition education programs, such as the *Expanded Food and Nutrition Education Program*.[11] For educators in any nutrition education program to be good stewards of funds that support their work, nutrition education interventions, defined as "behaviorally focused activities and/or actions to promote healthy eating

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and physical activity and prevent obesity and chronic disease,"[8] must be those most likely to be effective, or evidence-based.

The term evidence-based has different meanings for different disciplines and organizations, which makes it difficult to identify effective interventions for a given population. This article first defines what is meant by evidence-based interventions (Table 1). Next, the types of evidence that might be available to assess the likelihood a given intervention will deliver the desired outcomes will be discussed, along with how these types of evidence might be applied to nutrition education. Finally, a best practices approach is described for nutrition educators to use in evaluating evidence.

DISCUSSION

A number of organizations have undertaken the task of identifying evidence for particular interventions, including the Cochrane Collaborative,[12] the World Health Organization,[13] the Academy of Nutrition and Dietetics,[14] and the US Department of Agriculture Nutrition Evidence Library.[5] The latter specifically focuses on grading nutrition evidence. Each of these organizations has adopted a system called Grading of Recommendations, Assessment, Development, and Evaluation (GRADE).[15] The review process includes a literature review in which each relevant study is assessed for quality (ie, scientific rigor and validity, study design, and execution). The consistency of findings across studies, number of studies and participants, impact (importance of outcomes and magnitude of effect), and generalizability are considered. GRADE ranks the type of evidence as high (randomized trials), low (observational studies), or very low (any other evidence). Additional criteria are used to decrease the grade (eg, imprecise or sparse data, probability of reporting bias) or increase it (eg, strong evidence of association, dose response gradient). Ultimately, the body of evidence is assigned a grade ranging from high to very low quality. A systematic review of nutrition education research designed to improve dietary intake-related behaviors of children and adolescents that employed the GRADE method to assess the quality of evidence highlighted the disappointingly low numbers of studies with strong evidence of effectiveness.[16] To understand how evidence may be applied to nutrition education programs, it is important to recognize where the concept of evidence-based originated, what forms of evidence exist, and how these might be applied.

Defining Evidence-Based Programs

The idea of evidence-based interventions comes from medicine, in which the translation of research to practice is conducted in rigorous randomized controlled trials (RCTs), originating with the bench-to-bedside paradigm, which is based on studies in which a drug is developed in the laboratory and tested in a patient. Laboratory research is translated into studies of the efficacy of findings when applied to patients, such as for drug therapies. In these trials, participants are randomly assigned to an intervention or control group, and the intervention is delivered by research-trained interventionists according to a specific, well-defined protocol. The control group provides a means of comparison to ensure the effects result from the intervention itself rather than other influences. The participant sample size is adequate to ensure statistical power to detect a meaningful difference in outcomes between groups. When study results indicate statistically significant differences between the intervention and control groups, the intervention is said to have efficacy. Interventions tested in this way have internal validity: they establish cause and effect under the prescribed internal circumstances of the research trial.[17] In other

Table 1. Key Terms Related to Types of Evidence in Nutrition Education

Term	Definition
Evidence	A body of facts or information that provides a level of certainty that a proposition is true or valid.[26]
Emerging evidence	Evidence from interventions that have been developed and implemented in practice and show promise based on their underlying theory and logic, but lack data from an evaluation demonstrating effects.[26]
Emerging interventions	Interventions that have been developed and implemented in practice and show promise based on their underlying theory and logic, but lack data from an evaluation demonstrating effects on ≥ 1 obesity-related outcomes.[26]
Evidence-based practice	Nutrition education that uses evidence-based interventions.
Practice-based evidence	Evidence derived from or describing contexts, experiences, and practices of health care providers working in real-world practice settings.[26]
Practice-based interventions	Interventions that have been developed based on an evidence-based strategy and implemented and evaluated in practice, but have not been tested in a more formal research study.[26]
Research-based interventions	Interventions with contents based on sound scientific research.
Research-tested interventions	Interventions for which effectiveness and/or efficacy has been tested in ≥ 1 research studies.[26]

Note: The reader is encouraged to go to the Center for Training and Research Translation[26] for a more extensive glossary.