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Applying national survey results for strategic planning and program improvement: The National Diabetes Education Program

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ABSTRACT

Since the 1970s, the federal government has spearheaded major national education programs to reduce the burden of chronic diseases in the United States. These prevention and disease management programs communicate critical information to the public, those affected by the disease, and health care providers. The National Diabetes Education Program (NDEP), the leading federal program on diabetes sponsored by the National Institutes of Health (NIH) and the Centers for Disease Control and Prevention (CDC), uses primary and secondary quantitative data and qualitative audience research to guide program planning and evaluation. Since 2006, the NDEP has filled the gaps in existing quantitative data sources by conducting its own population-based survey, the NDEP National Diabetes Survey (NNDS). The NNDS is conducted every 2–3 years and tracks changes in knowledge, attitudes and practice indicators in key target audiences. This article describes how the NDEP has used the NNDS as a key component of its evaluation framework and how it applies the survey results for strategic planning and program improvement. The NDEP's use of the NNDS illustrates how a program evaluation framework that includes periodic population-based surveys can serve as an evaluation model for similar national health education programs.

1. Introduction

Since the early 1970s, the federal government has spearheaded several large-scale national education programs to reach the public and health care providers with critical information on preventing and managing the leading chronic diseases affecting the U.S. population. Guided by the latest scientific research, these national health education programs have addressed conditions such as diabetes, asthma, cholesterol, eye diseases, blood pressure, and kidney disease.

As shown in In*line Supplementary Table S1, these education programs[1] share common characteristics:

- They are federally sponsored and have a national agenda to reduce the disease burden in the United States.
- The programs are designed to reach a variety of audiences: the general public, those at high risk for the disease, those who have the disease or condition, and health care professionals.
- They employ a wide range of outreach methods and channels, including traditional media, social media, web-based resource portals, educational materials, and awareness-building campaigns.
- They develop partnerships with state and local health departments, key professional and voluntary organizations, and community stakeholder groups to enlist their support and help with disseminating and promoting program messages and materials to their constituents.

Abbreviations: CATI, computer-assisted telephone interviews; CDC, Centers for Disease Control and Prevention; CI, confidence interval; DPP, Diabetes Prevention Program; NDEP, National Diabetes Education Program; NIDDK, National Institute of Diabetes and Digestive and Kidney Diseases; NIH, National Institutes of Health; NNDS, NDEP National Diabetes Survey; OR, odds ratio; RDD, random-digit dial.

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[1] Program characteristics developed from website information, current as of December 19, 2013.

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2. Challenges of evaluating the impact of National Health Education Programs

Evaluating the impact of national health education programs presents a number of challenges. The requirements of "gold standard" evaluation designs (e.g., comparison groups, holding an intervention constant) do not align with the way these education programs work (e.g., no comparison group, multiple and frequently-updated implementation strategies). Federally sponsored education programs do not operate in isolation. Many other non-profit and commercial entities conduct their own education programs and advertising campaigns at the same time, distributing consistent or possibly conflicting messages. As a result, evaluations of the programs generally cannot provide evidence for causation.

National health education programs are inherently "messy," and the path from intervention to effect can be indirect (Hornik, 2002) and difficult to detect or isolate. For example, programs often have little or no control over placement of public service announcements in media channels. Furthermore, partner organizations may not be able to schedule their activities at the same time as the national program, diminishing the frequency and intensity of message delivery. In addition, federally sponsored education programs with the mandate to address public health priorities often must target their activities to multiple audiences who have the greatest risk or greatest disease burden such as racial and ethnic minority audiences or seniors. As a result, program resources are spread across efforts to reach multiple audiences with tailored messages instead of intensively targeting just a few audience segments over a long period of time. Large-scale national programs do not always publish their evaluation methodology or program results; thus, there is scant literature on relevant evaluation efforts. For example, the programs shown in In*line Supplementary Table S1 all conduct evaluation activities; however, they do not always report their evaluation framework or results in peer-reviewed journal articles.

One relatively recent article reviewed communication campaigns that employed a range of program and evaluation designs to target health behaviors (Wakefield, Loken, & Hornik, 2010). The authors noted that such campaigns were delivered in experimental settings or as regional or national interventions that are not operationally constrained to meet the needs of outcomes assessment. Evaluation designs for the latter include time series analyses, natural experiments, and analysis of associations in population-based studies. The authors concluded that, although isolating independent effects of mass media campaigns is difficult, "substantial evidence has, however, been garnered from study designs that, in isolation, are less than classically excellent, but in aggregate yield a substantial body of support for the conclusion that mass media campaigns can change population health behaviors" (p. 1268). Evaluators such as Davidson, Nakazona, Afifi, and Gutierrez (2009), Helitzer, Peterson, Thompson, and Fluder (2008), and Wutzke et al. (2007) have included baseline, process, and outcome measures collected from a single source or triangulated from multiple sources as part of a one-time or longitudinal evaluation study.

This article describes the ongoing evaluation activities of the U.S. Department of Health and Human Services' National Diabetes Education Program (NDEP). The article details how the NDEP conducts periodic surveys and uses the results to inform strategic planning and program improvement.

3. Overview of the National Diabetes Education Program

The NDEP was launched in 1997 to improve diabetes management and to reduce the morbidity and mortality from diabetes and its complications. The program is sponsored by the National Institute of Diabetes and Digestive and Kidney Diseases (NIDDK) of the NIH and the Division of Diabetes Translation of the Centers for Disease Control and Prevention (CDC). As shown in In*line Supplementary Table S1, the program is a multi-faceted information and education program that works closely with more than 200 public and private-sector organizations.

The program's goals are to improve diabetes management and outcomes, promote early diagnoses, and prevent or delay the onset of type 2 diabetes in the United States and its territories. Since its inception in 1997, the NDEP has become a leader in the development and implementation of diabetes information, education, and outreach activities.

Due to the NDEP's multi-faceted nature of the program, its theoretical underpinnings span multiple theories and models of communication, learning, and behavior of individuals, social groups, and communities. The overall Program is guided by a logic model (presented in Section 4.2), with relevant theories used to develop specific interventions. To further ensure cohesion among interventions, planners use a framework that focuses on eight variables important to behavior change across five commonly used theories. Three of these variables are necessary and sufficient for behavior change: whether the environment provides opportunity for the behavior or at least does not constrain it, whether the individuals have adequate motivation or positive intent to engage in the behavior, and whether they have adequate skills or ability to do so (Fishbein et al., 2001; Lotenberg, 2010).

For example, in recent years as NDEP has focused more on helping people change their behavior, the program has turned to the transtheoretical model of stages of change (Prochaska & DiClemente, 2005) for guidance. The temporal aspects of the transtheoretical model provide guidance on who is likely to be ready to change and what they need – costs reduced or benefits increased – to move to the next stage. (See Fig. 1 below showing the temporal relationship.) NDEP used this model to identify individuals' stage of change in the revised NNDS instrument for the forthcoming survey as well as in designing the instrumentation for an evaluation of Diabetes HealthSense (http://ndep.nih.gov/resources/diabetes-healthsense/), NDEP's web-based behavior change resource compendium.

With guidance from leading experts in diabetes, the program develops its strategic plans and its messages and materials to be consistent with the latest scientific research on effective approaches to diabetes prevention and management. As a public health program, the NDEP bases its priorities on an understanding of the epidemiology of diabetes and the disproportionate disease burden among different population subgroups. To reach these target subgroups, the NDEP uses a wide array of outreach and education strategies. These include Diabetes HealthSense (a comprehensive website containing resources for people at risk for or with diabetes, their family members, and health care professionals), training and technical assistance for organizations addressing various audience groups, outreach through mass media and social media, and educational materials that can be obtained free of charge from the NIDDK National Diabetes Information Clearinghouse. The NDEP's partners supplement national distribution of the program's messages through their own communications channels.

4. The NDEP evaluation framework

4.1. NDEP's evaluation history

The NDEP has conducted ongoing evaluation research activities on diabetes since the program was created. The program's initial and subsequent strategic plans have been based on periodic review