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Introduction

Changing behavior is incredibly difficult. Consider the times that you vowed to eat a healthier diet, get more exercise or more sleep, floss your teeth daily, drink less alcohol, or quit smoking. Even you, someone reading a book about designing interventions to change behavior, likely finds behavior change difficult.

In the United States, three health behaviors (smoking cigarettes, not getting enough physical activity, and eating the wrong kinds of foods or too much food) are responsible for nearly 75% of the variability in life expectancy through their impact on the prevalence of obesity, diabetes, and hypertension (Dwyer-Lindgren et al., 2017). Beyond these “big three,” many other health behaviors contribute to the burden of disease in the United States and globally, including drinking and driving, hygiene related to the spread of infectious disease, engaging in unprotected sex, aggressive and violent behavior, poor adherence to medication regimens, and ignoring advice regarding preventive care.

There is an urgent need for effective and efficient health behavior change interventions to reduce the burden of disease. But how do we design interventions to maximize their potential to be effective in facilitating behavior change? How do we plan for and create interventions with sustainability and dissemination in mind? What needs to be considered as we implement interventions to make sure that they are delivered as intended and can be replicated by others? How do we evaluate these interventions so we can demonstrate their effectiveness and learn as much as possible about how they work, for whom

they work, and how to improve upon them? How are interventions adapted to meet the needs of specific populations?

WHAT IS THE PURPOSE OF THIS BOOK?

The purpose of this book is to provide a stepwise process for designing multilevel behavior change interventions to promote community health. My use of the word “design” encompasses a consideration of all of the phases of developing a behavior change intervention, including how a team plans, creates, implements, and evaluates the intervention. The focus of the book is on designing new multilevel interventions (MLIs), but the process suggested may be helpful to those adapting existing evidence-based intervention (EBIs) by providing a systematic approach for making decisions about what adaptations are required to meet the needs of a community.

Multilevel interventions attempt to change not only individual behavior but also the places and systems that provide the context within which individual behavioral choices are made. Because behavior change is so difficult, targeting change at multiple levels increases the chance that the intervention will be effective. Because a multilevel approach targets system change as well as individual change, the chance that the intervention will be sustainable is increased. This book groups the contexts that influence health behavior into three environmental levels: individual, social, and physical environments. These three environmental levels provide the framework for designing MLIs.

The emphasis of the book is on designing health behavior programs using a community-engaged approach. A community-engaged approach includes community stakeholders in all stages of the intervention design. The importance of involving community speaks to the need to create interventions that meet the needs of the community, embrace community assets, reflect and respect community culture, and build community capacity. Engaging community throughout the process increases the chances that the intervention will be acceptable, feasible, and sustainable.

The intervention design approach is intended for health problems that are widespread in the community that can either be prevented by engaging in healthy behaviors (universal prevention) or remediated through behavior changes (selective prevention). The process and examples used throughout the book reflect my public health perspective and experience as a behavioral scientist creating and evaluating MLIs in community settings. However, increasingly, medical systems are developing and offering behavior change programs for their clinic populations and may find the process detailed in this book useful.

WHO IS THE AUDIENCE FOR THIS BOOK?

The audience for this book includes both researchers and practitioners who are designing or adapting behavior change programs to improve population health. Students preparing to enter a health profession as researchers or practitioners will find the book useful as a blueprint for guiding their work. In addition,

researchers and health professionals already working in the areas of public health, community health, occupational health, nursing, and medicine who are developing new community-based interventions or adapting EBIs to meet the needs of their own community will find the information and suggestions herein useful. This book's contents will be particularly valuable to the behavioral scientists or program planners who are responsible for creating the content and activities that will make up the intervention.

Creating and evaluating the effectiveness of behavioral interventions through a rigorously designed intervention trial is typically the work of researchers. Intervention trials are time-constrained; their beginning and ending is predetermined by a funding mechanism. Therefore, clarity of purpose and a process for planning and creating the intervention are crucial from the beginning of the trial. The intervention must be able to be implemented with rigor and according to a protocol that allows details of the intervention to be replicated. The research team must plan for an evaluation that helps them determine if their intervention was effective in creating behavioral change, as well as understand how and for whom the intervention worked. This book details the process for designing interventions to be evaluated in research settings using rigorous intervention trials.

Practitioners, on the other hand, may use a variety of approaches in program planning. They may develop their own interventions based on community wisdom, or they may adapt EBIs with proven effectiveness in other communities. Many EBIs will need to be modified to be culturally appropriate for a specific community, adapted to meet implementation challenges unique to a community, and refined to make sure that evaluation tools and metrics meet the needs of the community. This volume offers insights into how the phases and steps outlined may be used by those adapting existing interventions. Although practitioners may not be conducting rigorous intervention trials, they will want to be able to evaluate their programs to ascertain whether outcomes can be attributed to the intervention efforts and to understand how, and for whom, the intervention worked. This book provides information on conducting formative, process, and outcome evaluations that will be valuable to both researchers and practitioners.

WHAT APPROACH IS USED?

The theory-informed approach in these pages was adapted from an intervention planning process created by Perry (1999). The book guides the user through the process of designing an MLI using a stepwise approach organized by phases. This organization is not meant to be a strict recipe (there is invariably a cyclical nature to the process) but a guidepost to help keep intervention teams focused on important tasks. Twelve steps are organized within four phases:

The Plan Phase

1. Identify a behavior-based community health problem.
2. Choose the relevant behavioral determinants.

3. Create a conceptual model.
4. Review the conceptual model with the evaluation team and community stakeholders.

The Create Phase

5. Write the intervention objectives and identify potential intervention components.
6. Design intervention strategies.
7. Create a logic model.
8. Share the logic model with the evaluation team and community stakeholders.

The Implement Phase

9. Develop process evaluation measures.
10. Finalize intervention protocol, training, and materials.

The Evaluate Phase

11. Evaluate the effectiveness of the intervention.
12. Prepare for the next iteration or dissemination of the intervention.

The book will not provide every detail needed to plan, create, implement, and evaluate interventions; additional resources and expertise will be needed. Important considerations regarding how to find funding for community-based interventions, the process of community engagement, and the ethical issues related to working in and with community are beyond the scope of this book. In addition, a team designing a community-based behavior change intervention will need expertise in study design and biostatistics.

There is a growing recognition that no one theory holds the key to understanding behavior change. A chapter is included that reviews health behavior theories that help identify determinants or predictors of behavior (a key step in the Plan Phase) as well as health behavior theories that focus on how change happens (the focus of the Create Phase). Information on theory is presented in a way that stresses its practical use to those designing interventions or programs.

Currently, there is great interest in *implementation science*, a broad term that includes the development and application of common principles, models, and designs to understand and promote the uptake of EBIs (Brownson et al., 2015). Implementation science begins with the assumption that there are interventions or intervention approaches that have demonstrated effectiveness and efficacy and are ready to be adopted by other communities and populations. Implementation science deals with how to facilitate the dissemination and implementation process so that effective interventions can extend their reach. The goal of this book is to help teams across the globe develop interventions that are effective, efficacious, and community-centric, thereby increasing the number of EBIs for dissemination. The approach that I propose engages communities in

all phases of the intervention design with an intention of designing interventions that will be relevant to communities, feasible to implement in communities, and create value within communities. Those attributes promote the sustainability of the intervention as well as its dissemination to other communities.

OVERVIEW OF THE BOOK'S CONTENTS

The book begins with a discussion of MLIs in Chapter 1, including what they are, why they are useful, and the utility and limitations of ecological models in developing multilevel interventions. Next, a framework for MLIs that focus on changes at the individual, social, and physical environments is presented, followed by an example of an MLI. Chapter 1 concludes with an overview of the four phases of the design process, including a summary of each of the 12 steps. Chapter 2 reviews theories of behavior change and includes theories addressing change at the individual level and theories addressing system-level or organizational change. The focus is on a practical application of theory, with a distinction made between theories that help identify the factors that are related to behaviors and theories that suggest the mechanisms of how change happens, both in individuals and in organizations. Chapters 3 through 6 describe how to implement the four phases and corresponding steps of the multilevel design process, with each chapter representing one phase: Chapter 3 describes the Plan Phase, Chapter 4 the Create Phase, Chapter 5 the Implement Phase, and Chapter 6 the Evaluate Phase. To illustrate the steps in each phase, I develop a hypothetical intervention with the goal of reducing middle-school students' consumption of sugar-sweetened beverages. Finally, Chapter 7 provides guidelines for adapting existing interventions to different communities by using a modified version of the four-phase multilevel design framework.

SUMMARY

Changing behavior is a very difficult task, and no framework, set of steps, or process can guarantee success. We still need to learn a great deal about how to positively influence health behavior change in communities, sustain change, and adapt interventions to meet the ever-changing needs of the population and the fluid environments that have an impact on our behaviors. Although following the steps in this book cannot guarantee success, using the framework and process described will help prevent avoidable mistakes, enhance what we can learn from our attempts, and keep us grounded in our purpose of improving the health of communities.

As a final note, this book was written during the global pandemic caused by COVID-19. The epidemic has highlighted the great importance of health behavior in preventing and mitigating disease risk. People around the globe have received instructions on how to wash their hands, the importance of

wearing masks, and the need to practice social distancing. People have been encouraged to be vaccinated in order to reduce their risk of COVID-19 and reduce community transmission. Individual behavior, supported by a change in community norms, is a primary mechanism for reducing the spread of this deadly virus. This pandemic is not just about health behavior related to infectious disease, however. As we search for the underlying factors that make some more vulnerable to COVID-19, preexisting health conditions, including obesity, diabetes, and heart disease, are showing up as potentially important risk factors. The vast majority of these preexisting conditions have their genesis in health behavior and are influenced by organizational, systemic, and market-driven forces. The COVID-19 pandemic is also highlighting the influence of health disparities on morbidity and mortality as communities of color and vulnerable and low-income communities suffer disproportionately, both health-wise and economically. It is my hope that we emerge from this pandemic with a deeper commitment to the health and well-being of all people and to a recalibration of the systems that influence our behavioral choices.