journal homepage: http://kont.zsf.jcu.cz
DOI: 10.32725/kont.2024.003

KONTAKT / Journal of nursing and social sciences related to health and illness

Short communication

What does a "theoretically-guided" intervention really look like? A guide for nursing and social science researchers

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Abstract
Theoretical frameworks and models provide a roadmap for clinical practice and research by explaining and predicting the processes that influence intervention outcomes. They serve as the basis for understanding, conceptualizing, and designing nursing and social science intervention studies. Yet what is often not clearly understood is how theory actually guides intervention development and testing. What do we really mean when we describe an intervention as theoretically driven and how does a research scientist go about making this happen? The purpose of this article is to provide an exemplar of how theory guided the development of an evidence-based nursing intervention developed to reduce sexual risk behaviors (The Health Improvement Project for Teens). This approach can be used as a guide or framework applicable to other intervention programs in development. We also discuss the need in the Czech Republic for more rapid integration of broader theoretical approaches to guide intervention development and continued focus on the development and testing of nursing interventions. While still in its initial stages of development, nurse and social scientists in the Czech Republic can quickly build rigorous interventions by expanding the use of the broad array of useful theories that can guide intervention development.

Keywords: Care; Intervention; Models; Nursing; Research; Theories

Introduction

Nurse scientists around the world have been urged to build the science of nursing more rapidly through interventions that target a variety of health challenges, educational needs, social issues, and economic and policy priorities. Developing, conducting, and testing interventions in rigorous research studies remains the gold standard by which conclusions can be drawn about cause-and-effect relationships between an intervention or treatment and individual, community, or organizational outcomes. When it comes to actually designing these interventions, both novice and seasoned researchers recognize that the best interventions are those that are guided by theory (Morrison-Beedy and Melnyk, 2014), but in reality what does that mean and how do we, as researchers, actually make that happen? We present a case example of one intervention, The Health Improvement Project for Teens (*HIPTeens*), that targeted reduction in sexual risk behaviors in adolescent girls in order to decrease HIV, STIs (sexually transmitted infections), and unplanned pregnancies. We describe how the theoretical framework was integrated across each intervention component and the assessment measures. This provides a real-world exemplar of what it means to develop an intervention that is "theoretically-driven".

To quickly review, theories are an explanation or set of ideas that are intended to explain phenomena. Theories help provide an organizing image of a study using an integrated set of concepts and relational statements that are directly testable. In essence, theory provides a road map for developing and interpreting research by describing or predicting factors that impact nursing outcomes. Theoretical frameworks guiding interventions are directly testable, and include an integrated set of concepts, existence statements, and relational statements that link the problem to be addressed with relevant intervention strategies and the expected changes in outcomes. Theory provides an understanding of the problem (*e.g.*, health, educational, social, organizational issues) that the intervention targets, the nature of the intervention, and the mechanisms underlying the anticipated improvement in outcomes, and allow us to foster a systematic approach to intervention development and implementation.

In a theory, concepts are labels, categories, or properties to be studied (*e.g.*, patients, nurses, cardiovascular disease), whereas concepts are used to order phenomena or refer to dimensions and are often called variables. Constructs are constructed of concepts and are directly or indirectly observable (anxiety, self-efficacy). Within a theory, hypotheses are deduced from existing propositions between concepts. Theories may organize and combine multiple variables that are closely

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Submitted: 2023-11-02 • Accepted: 2024-01-16 • Prepublished online: 2024-01-16
KONTAKT 26/1: 96–99 • EISSN 1804-7122 • ISSN 1212-4117

linked into one grouping or subheading within the structure of the theory. For example, motivation is a construct in self-determination theory that is comprised of intrinsic and extrinsic components. When the relationship between concepts is suspected, but not enough evidence has been gathered to strongly support the relationship, the relationship needs to be tested empirically. Theory helps investigators to identify both outcomes and mediating processes, which specify a "cause and effect" sequence between an intervention and outcome.

An exemplar of using theory to guide development of an evidence-based intervention

Since theoretical frameworks allow us to better represent the complexity of the situation under study, which for *HIPTeens* was sexual risk reduction behaviors in adolescents, we first examined many theories related to behavior change, including those that had been tested for a variety of personal behaviors: smoking cessation, weight loss, substance use, and contraception. The Information-Motivation-Behavioral Skills (IMB) Model (Fisher and Fisher, 1992) was identified as one that was both relevant and straightforward and logical in its simplicity. This model posits that to change a behavior, such as sexual risk behaviors, a person needs the knowledge or information to understand their personal risk, the motivation to see themself as vulnerable and in need of changing their behavior, and possess the skills needed to enact such behavioral change. These theoretical constructs – information, motivation, and skills – then directly and indirectly lead to behavior change (see Fig. 1).

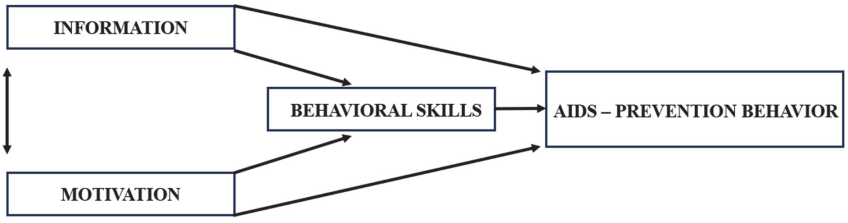

Fig. 1. The Information-Motivation-Behavioral Skills (IMB) Model by Fisher and Fisher (1992)

Once an appropriate theoretical framework was identified the real work began as the intervention itself was developed. Based on an intensive literature review of effective behavior change programs across a wide array of health issues, we decided to develop a group-based intervention (to promote social norms and connections in teens) divided into four 2-hour sessions to facilitate both engagement and adequate intervention dosing. We recognized that teens would not stay engaged and interactive for more than two hours at a time and, based on our systematic review of duration of effective interventions in other populations or behaviors, we determined the need for a total of eight contact hours for participants to have sufficient exposure to the intervention strategies for impact.

Using the IMB Model as our guiding framework, we then developed engaging activities (*e.g.*, role plays, games) that addressed each of these theoretical constructs (information, motivation, skills). For example, we developed a game for participants based on a popular television show that reviewed basic HIV/STI knowledge on prevention, transmission, and common myths to address the information (I) construct. Similarly, we developed roleplays, interactive activities such as a motivation ruler, and condom demonstration activities to target the motivation (M) and behavioral skills (B) constructs. Many of the intervention strategies addressed a combination of these constructs at the same time. For example, we crafted roleplays that developed communication and negotiation skills while addressing susceptibility to HIV/STI/Pregnancy from having unknown or multiple partners.

Recognizing that all participants may not be able to attend each of the four sessions, we did not load all the intervention components that targeted "information", for example, into just one session. Rather, each of the four sessions all contained strategies that addressed information, motivation, and behavioral skills. In this way, should a participant be absent from a session, they would still receive intervention "doses" of I-M-B during the sessions they attended. This was critical because we did not know at that time if one or a combination of I, M, or B were the most important constructs needed to change behavior. If a particular construct was identified as the predominant predictor of behavior change, those participants who did not receive that I, M, or B strategy would most likely not change their behavior. This "lack" of intervention dosing could, depending on the number who did not attend session one, dilute the true impact of the intervention and lead to results that would not reach statistical significance. Thus, the need to carefully map out your intervention with a focus on adequate dosing on all constructs is essential.

Once we developed the intervention, we then focused on identifying valid and reliable measures to assess changes in each of the IMB theoretical constructs. Knowing that these constructs could be multifaceted, particularly motivation and behavioral skills, we used multiple psychometrically sound measures to measure each construct, as well as multiple measures for assessing change in our sex behavior outcome (*e.g.*, numerical counts of specific sex behaviors, STI, and pregnancy biological testing, Likert-type self-efficacy scales).

In addition to identifying data collection tools for each theoretical construct, we also needed to develop fidelity measures to ensure that our group intervention facilitators implemented the intervention to participants as intended. Despite manualizing the entire intervention, including specific approaches, narratives, and prompts to foster engagement, interaction, and discussion during the groups, we recorded audio of each session. Trained fidelity assessors then reviewed this recording to ensure *HIPTeens* was delivered as originally developed. With separate fidelity measures developed for each of the four group intervention sessions, we assessed both *content* (covering all the components required during that session) as well as the *process* of using evidence-based motivational interviewing (MI) techniques to guide communication directed at behavior change (Miller and Rollnick, 2013). This MI approach empowers individuals, navigating a path between behavior facilitators actively listening to understand the participants' current position in their behavior change process and providing guidance by offering advice and information. Examples of these fidelity measures required for each intervention session (Table 1 for Content Assessment and Process Assessment Table 2) are provided below.

Table 1. The health improvement project for teens (HIPTeens) content fidelity assessment measure

HIP TEENS SAFE raters' integrity content evaluation Session 2				
Date:_____	Intervention: HIP Session 2	Wave:_____	Meeting time:_____	Duration of group:_____
Facilitator name:	Fidelity rater name:			
_____	_____			
HIPTeens Session 2 Risk behaviors and manual of healthy sexual choices				
These session content goals were covered:				
Review the take home activity, risk continuum and perception of HIV risk			Yes	No
Comments (especially, if No)_____				
Risk sensitization use the traffic light to review safer vs. less safe behaviors			Yes	No
Comments (especially, if No)_____				
Develop a menu of healthy choices/hip teen ruler			Yes	No
Comments (especially, if No)_____				
Pros and cons of condom use			Yes	No
Comments (especially, if No)_____				
Wrap up – comments (especially, if No) _____				
Other questions: Was the manual followed?				
1 – Not at all; 2 – Only a little; 3 – Some; 4 – Most of the time; 5 – Always				

Table 2. The health improvement project for teens (HIPTeens) fidelity assessment measure using motivational processes

HIP TEENS integrity process evaluations		
Session # _____		Session date: _____
Group: SAFE NBA		Facilitators' initials: _____
Rater's name: _____		Date of rating: _____
Please rate the group facilitator audiotapes on these skills:		
Doesn't reflect		*Reflects back*
0 Not at all	1 Somewhat	2 Consistently
Doesn't provide feedback		*Provides feedback*
0 Not at all	1 Somewhat	2 Consistently
Doesn't praise effort		*Praises effort*
0 Not at all	1 Somewhat	2 Consistently
Confrontational		*Rolls with resistance*
0 Not at all	1 Somewhat	2 Consistently

From intervention development, through implementation of the *HIPTeens* intervention and assessment of both antecedent and outcome measures, as well as confirming the fidelity of the intervention across the course of the study, the *HIPTeens* intervention was guided by a theoretical framework. As a result of this rigorous approach to intervention science conducted and tested in a randomized clinical trial of almost 800 girls followed over 12 months, *HIPTeens* was identified by the U.S. Department of Health and Human Services (DHHS, 2019) and the Centers for Disease Control (CDC, 2015) as a theoretically-driven, evidence-based, HIV/STI/teen pregnancy prevention intervention.

Ultimately, theoretical models are effective guides for research, practice, and the development of interventions that improve the health of the public. A reminder – the theory guides the operationalization of the intervention; it specifies the nature and dose of the intervention necessary to produce the expected effects. Results of theory-based intervention evaluation indicate who benefits from the intervention ,in what context it is deliverd, and how the intervention produces changes in the outcomes.

The current state of theory integration in the Czech Republic

The described process of using theory to guide the development and scientific testing of The Health Improvement Project for Teens (*HIPTeens*), or the implementation and testing of interventions in research studies, is the gold standard in nursing research in countries where such approaches have an established history. Over the decades, the development and implementation of theoretical frameworks to guide research in the field of nursing has gone through different phases and milestones. Along the way, leading experts have emphasized the importance of guiding nursing practice with theory (Tóthová and Hellerová, 2017). Since conceptual models and nursing theories provide healthcare professionals with a philosophical and theoretical framework for providing care to the healthy and the sick (Pavlíková, 2006), their use in practice enables nurses to respond to the public's desire for holistic quality care with research that supports quality, safety, and cost with measurable outcomes. Nursing models and theories also assist nurses to evaluate the influence of culture, family, and community on some nursing, social science, and medical practices (Tóthová and Olišarová, 2017).

In the Czech Republic, nurses, in particular, use models and theories in nursing documentation to collect nursing anamnesis. Majora Gordon's "Functional Health Type" model is often used for systematic nursing assessment (Tóthová et al., 2014). This holistic philosophy model illustrates the most comprehensive conception of the person within nursing (Pavlíková, 2006). The Gordon model is also used in teaching clinical nursing at universities, and some institutions also prepare nursing documentation according to this model.

Other nursing models and theories are also discussed and analysed when teaching the theoretical foundations of nursing. However, these models and theories remain mainly within the university education framework. Students sometimes use these theoretical frameworks in their undergraduate, diploma, or dissertation work. For example, the model of culturally sensitive and tailored care was used during a research investigation aimed at mapping social inclusion (Giger and Davidhizar, 2002) of the Roma minority (Toumová et al., 2019). Similarly, M. E. Levine's conservation model for nursing was used (Levine, 1996) to guide research studying the impact of colorectal cancer on patients' lives (Abumaria et al., 2015; Dušičková and Bártlová, 2018). Yet the future of nursing science and its impact on improving health outcomes across communities lies in the expansion of rigorous research studies in the Czech Republic and comparably-prepared nations that address priority health, education, and social care issues. The need for research to drive changes in practice goes hand-in-hand with the need for concurrent integration of a vast array of theoretical models and frameworks, which can serve to efficiently and effectively guide research by describing or predicting factors that impact these outcomes.

Conclusion

The core of the theoretical frameworks in the delivery of nursing care and the conduct of research is providing a philosophical and conceptual foundation for the discipline. In the Czech Republic, these frameworks are predominantly used in academic and research settings. In the clinical setting, one of the most well-known models has implications for nursing documentation and clinical assessment of patient needs. As nursing science continues to grow and increase in rigor in the Czech Republic, so too will the use of various theoretical frameworks and models to guide intervention development and research studies. While nursing research in the Czech Republic is at an early stage of development, the challenging road to building a robust research base can be accelerated through global partnerships with nurse scientists who have already travelled this path. Active international cooperation and the use of foreign experts' experience can help shorten this path and make it a more productive journey.

Ethical aspects and conflict of interest

The authors have no conflict of interest to declare.

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