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How could nurse researchers apply theory to generate knowledge more efficiently?

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Abstract

Background: Reports of nursing research often do not provide adequate information about whether, and how, researchers applied theory when conducting their studies. Unfortunately, the lack of adequate application and explication of theory in research impedes development of knowledge to guide nursing practice.

Objectives: To clarify and exemplify how to apply theory in research.

Methods: First we describe how researchers can apply theory in phases of research. Then we share examples of how three research teams applied one theory to these phases of research in three different studies of preventive behaviors.

Conclusions: Nurse researchers can review and refine ways in which they apply theory in guiding research and writing publications. Scholars can appreciate how one theory can guide researchers in building knowledge about a given condition such as preventive behaviors. Clinicians and researchers can collaborate to apply and examine the usefulness of theory.

Clinical Relevance: If nurses had improved understanding of theory-guided research, they could better assess, select and apply theory-guided interventions in their practices.

Keywords

Introduction

Theories can be useful to nurse-researchers as guides for conducting research (Bartholomew & Mullen, 2011; Rodgers, 2005). A theory offers a set of concepts and propositions that can be applied consistently and examined systematically across studies of clinical problems

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(Meleis, 2012). Admittedly, not all research should be theory-guided; some research is conducted to generate theory about new phenomena (Goldkuhl, 2012). When appropriate, researchers can use theories as guides across phases of research. When researchers communicate clearly about how they have applied a theory in their studies, others can synthesize evidence more readily across studies where the same theory was used. By doing so, researchers can build scientific knowledge more efficiently than if they were not theory-guided (Fawcett, 1978; Meleis, 2012; Rothman, 2004).

Many researchers have not applied theories to their studies when they could have done so (Balfe & Brugha, 2009; Bayrami, Taghipour, & Ebrahimipour, 2014; Heit, Blackwell, & Kelly, 2008). In a review paper, Conn, Cooper, Ruppar, and Russell (2008) sought to characterize the reports of intervention studies conducted by nurses. They found that about half of authors reported using a theory or framework, slightly less than half shared any links between theory or framework and their interventions, and only about a quarter of authors reported sufficient detail either for future researchers to replicate the interventions or for clinicians to translate them into practice.

Interdisciplinary scholars (Kobrin, 2011; Michie, Fixsen, Grimshaw, & Eccles, 2009; Sales, Smith, Curran, & Kochevar, 2006) have called for health-care researchers to explicate how theory guides research more clearly. Painter and colleagues (2008) investigated the degree to which researchers used theory to conduct their studies. They reviewed health behavior publications in three disciplines—medicine, public health, and psychology—from 2000–2005. Among the 193 publications they identified, only about a third of the teams mentioned theory.

Michie and Abraham (2004) examined reviews of studies in which researchers claimed to have assessed the efficacy of theory-guided interventions to promote health behaviors. These authors concluded that researchers often did not (a) explain how theory guided their studies in their publications or (b) delineate why or how they proposed that their intervention would be effective, according to their theories.

Some researchers may apply components from theories to their studies, however, they often apply only one or a few components, rather than all that are relevant (Conn et al., 2008; Michie & Abraham, 2004). The lack of adequate application of theory to research and of clear explication about how theory guides research impede researchers who strive to replicate prior studies and develop knowledge to support nursing practice (Fawcett, 1978; Meleis, 2012). Perhaps many researchers have not clearly understood how and why theory can guide them across phases of research.

Our objectives are to clarify and exemplify how researchers can apply theory in health-related research. In the following sections, we explain how three research teams applied one theory in phases of research and we illustrate our points with examples from these three studies. If nurse researchers could improve the adequacy with which we conceptualize, apply, and report both the "why" and "how" of theories guiding our studies, then we could replicate such studies more readily and generate knowledge for nursing practice more efficiently.

Background

Three research teams guided their studies with the Theory of Care-Seeking Behavior (TCSB). This theory is a middle-range theory focused on one aspect of human experience (Smith & Liehr, 2008). As a middle-range theory, the TCSB is abstract enough to guide researchers and clinicians in generalizations, yet specific enough to guide research (Cody, 1999; Smith & Liehr, 2008). It can be used to describe, explain or predict the phenomenon of care-seeking. According to the TCSB, care-seeking behavior refers to individuals' use of clinical services for health care, including engaging in secondary prevention behaviors (SPBs). SPBs are evidence-based approaches that people engaged in either to detect disease early or to intervene promptly to control disease (Cohen, Chavez, & Chehimi, 2007).

In the TCSB, there are two different types of variables that have an impact on care-seeking behavior: psychosocial variables and external conditions. The psychosocial variables are affect, utility beliefs, normative influences (norms), and habits. Affect refers to feelings related to SPBs, such as anxiety about a screening process. Utility beliefs refer to values and probabilities of experiencing worthwhile outcomes from particular SPBs. Norms refer to perceived social expectations such as either peers' or professionals' views regarding SPBs. Habits refer to how individuals usually engage in similar behaviors such as having annual exams. The second type of variable is external conditions, which refers to factors typically outside of individuals' control that are influenced by institutional or public policies (Lauver, 1992; Lauver, Settersten, Kane, & Henriques, 2003). This variable has been operationalized as financial affordability, geographic accessibility, and acceptability of staff to patients (Facione & Katapodi, 2000; Lauver et al., 2003). See Table 1 for a summary of these concepts and their definitions.

Each of the three authors had identified clinical problems that were conceptually similar while working independently. Each had identified a population that was unlikely to obtain screening tests as recommended by evidence-based guidelines. After careful consideration of theories, we separately chose the same theory to guide studies of our clinical problems. Two research teams described people's use of cancer (Lauver et al., 2003; Lor, Khang, Xiong, Moua, & Lauver, 2013) and sexual transmitted infections (STIs) screening (Backonja, Royer, & Lauver, 2014). A third team tested intervention effects on women's use of breast screening tests (Lauver et al., 2003). In different studies, the three teams sampled college students, Hmong women, and low-income women.

In the following sections, we discuss how phases of research are relevant to theory-guided research. We exemplify the following phases: Phase 1, Conceptualizing the clinical problem; Phase 2, Describing how to choose a theory; Phase 3, Describing how theory guides study aims; Phase 4, Delineating how theory guides methods; Phase 5, Describing how theory guides analyses; Phase 6, Reporting study results; and Phase 7, Incorporating theory in summary discussions.

Phase 1: Conceptualizing the Clinical Problem

Health-related research begins with researchers identifying clinical problems to study. Then researchers review literature to delineate characteristics of such clinical problems (Rodgers,

2005; Rogers, 2000; Walker & Avant, 2005). If scholars understand the conceptual dimensions, antecedents, and consequences of their clinical problems, then they are likely to select theories and methods that are aligned well with their clinical problems.

To illustrate, three research teams conceptualized their clinical problems as secondary prevention behaviors (SPBs). SPBs refer to behaviors that assist in either the early detection or the early treatment for a condition, regardless of the presence of symptoms (Cohen et al., 2007). The research teams described their clinical problems of interest as SPBs because this conceptualization is consistent with lay peoples' perceptions of STIs and cancer screening. Typically, lay people do not differentiate between having tests for asymptomatic screening or for diagnostic purposes with symptoms.

One team identified the clinical problem that adolescents and young adults 15–24 years old were acquiring about half of all STIs (Weinstock, Berman, & Cates, 2004; Satterwhite et al., 2013). In addition, young people often do not engage in either asymptomatic screening or symptomatic testing for STIs as recommended (Centers for Disease Control and Prevention, 2010; 2012; National Committee for Quality Assurance, 2007; Tao, Hoover, & Kent, 2012; Tao, Hoover, Leichliter, Peterman, & Kent, 2012). Therefore, this team conceptualized the clinical problem as a SBP.

In another instance, one team identified that Hmong women have underused breast and cervical SPBs for cancer. Only 16% of a sample of Hmong women in California had ever had mammograms (Yang, Mills, & Dodge, 2006). In contrast, a Healthy People 2020 goal is to increase the percentage of women who receive asymptomatic screening for breast cancer to 81% (United States Department of Health and Human Services, 2013).

Phase 2: Describing How to Choose a Theory

There are several strategies that researchers can use to choose a theory to guide their studies. Researchers can consider whether or not a given theory has concepts and propositions that adequately capture the nature of the clinical problem and the proposed relationships among such concepts. They can review whether or not alternative theories are credible, clear, and parsimonious with regard to their phenomena (Fawcett, 1978; Meleis, 2012). Also, they examine the degree of empirical support for the theory. This process is often iterative of comparing theories for similarities or differences and for the degree of empirical support.

For example, the team concerned about young adults' STIs rates had synthesized current research about young adults' engagement in SPBs for STIs. This team considered whether to guide their study with the TCSB. Importantly, they reviewed the literature for variables that had the same conceptual definitions as those in the TCSB, regardless of whether prior researchers had been guided by the TCSB or had used the same terms for variables as in the TCSB. The team found that many definitions of variables in prior STIs research were consistent with definitions of concepts in the TCSB. The team reviewed the literature for empirical support of the concepts from the TCSB with regard to SPBs for STIs (e.g., beliefs, normative influences; Balfe & Brugha, 2009; Chacko et al., 2008; Head, Crosby, Shrier, & Moore, 2007; Sanders, Nsuami, Cropley, & Taylor, 2007). The team found these variables

had been associated with SPBs for STIs. Together, these conclusions informed the team's decision to guide their study with the TCSB.

Researchers can consider whether concepts and propositions from promising theories are congruent not only with their clinical problem but also with the culture of the population to be studied. We share an illustration of how one team, who studied Hmong women, had investigated whether the TCSB was conceptually adequate to guide their study. After identifying that the concepts and propositions in the TCSB were relevant to their clinical problem of interest, the team decided to seek consultation about the appropriateness of the TCSB for the Hmong population with which the researchers were working. The researchers chose three female Hmong students in the health professions to serve as a panel of cultural consultants. Without telling the consultants about the TCSB, a researcher asked, "What do you think are some possible reasons for why Hmong women would get, or not get, breast or cervical cancer screening?" Only after the consultants shared all their ideas did researchers introduce the TCSB concepts. The research team asked the consultants in a neutral fashion whether or not their reasons corresponded to the TCSB concepts and they asked what might have been omitted. By consensus, the consultants agreed that the concepts from the TCSB were conceptually consistent with their ideas, the TCSB concepts were logically adequate to explain SPBs, and they could not think of concepts omitted from TCSB. This process provided partial support for the initial validity of the TCSB regarding cancer screening among a Hmong population.

Phase 3: Describing How Theory Guides Study Aims

Theories can guide researchers systematically in many ways. If researchers have aims to describe engagement in SPB, then a theory can guide the methods. If researchers have an aim to test intervention effects on SPB, as guided by theory, then the theory can guide the methods and the intervention.

Two research teams planned descriptive studies which were guided by the TCSB. Their aims were to describe SPBs because their phenomena were not well understood in their particular populations of interest. One team described Hmong women's beliefs, feelings, norms, and external conditions regarding breast and cervical cancer SPBs with an interpretive approach. The second team examined college students' reasons for engaging in SPBs for STIs with a mixed-methods approach. See Table 2 for a summary of the teams' aims and methods in three different studies about SPBs guided by TCSB.

One team's aims were to predict SPBs for breast cancer because there was empirical support for proposed relationships between TCSB concepts and breast screening behaviors. The TCSB includes a proposition that external conditions moderate the influence of other explanatory variables. So, this team derived a study aim to test whether external conditions moderated the effect of their intervention.

Phase 4: Delineating How Theory Guides Methods

Descriptive studies: Using concepts from theory to inform data collection.—
When researchers plan studies that are theory-guided, they typically assess variables that are consistent with concepts from the theory. In one such instance, the team who studied STIs

developed a questionnaire for data collection based on concepts evidence for the TCSB (e.g., Balfe & Brugha, 2009; Chacko et al., 2008; Head et al., 2007; Sanders et al., 2007). The team created checklists with short-answer responses and open-ended questions for spontaneous responses. They systematically reflected each TCSB concept in their items. One checklist addressed possible reasons to seek STIs screening. It included the item, "When I have symptoms"; this item was written to reflect habits. Another checklist included reasons not to engage in SPBs; one item was, "STD testing is expensive"; this item was written to reflect external conditions.

In another instance, the team who studied Hmong women developed an interview guide with open-ended questions. Researchers created at least one question for each concept in the TCSB. To elicit information regarding affect, researchers asked, "What are your feelings about getting a Pap test?" To elicit utility beliefs, researchers asked, "When you think about having a breast exam, what thoughts do you have?" The team used an interview rather than a written questionnaire because traditionally the Hmong communicate orally (Thao, 2006).

Experimental study: Concepts from theory guide overall design.—One team applied the TCSB in a randomized, controlled trial (Lauver et al., 2003). This team hypothesized that a tailored message about breast cancer screening, based on the TCSB, would be more effective in promoting breast cancer screening than standard messages. This hypothesis was based on researchers' ideas that the TCSB was more adequate than other behavioral theories. Furthermore, they hypothesized that the message effects would be moderated by external conditions, based on propositions in the TCSB and empirical findings (Lauver et al., 2003). To test these hypotheses adequately, the team applied the TCSB concepts in either the overall design or analysis. To apply these concepts in the design, researchers sought women who had not had mammograms in the past year to control for the concept of habit in the recruitment of the sample. They selected nurses to be interveners to reflect the concepts of social and professional norms, assuming nurses would be perceived as socially accepted and credible authorities about cancer screening.

To apply in analyses, researchers developed three different message conditions to be delivered by telephone and in subsequent mailings. In the control group, no messages were provided initially. For the second group, the messages offered standard information – that is, typical recommendations about breast screening with factual information and rationale, but no discussion of TCSB concepts. The third group received messages that involved assessment and discussion of selected TCSB concepts including: participants' beliefs, affect, or external barriers, tailoring on participants' named issues. Examples included: (a) utility beliefs about need for, and undesirable side effects of, screening and (b) information about external conditions such as typical costs of screening and local screening sites. Because the concepts guiding the third message group were not reflected in other messages, the team tested whether participants getting the theory-guided message had higher screening rates than those who received other messages (i.e., typical recommendations or no message initially).

Phase 5: Describing How Theory Can Guide Analyses

Theory can guide researchers in analyzing either narrative or numerical data. To illustrate, the team used an interview guide with Hmong women applied theory to their in analysis of narrative data. The team created coding categories that were based on the TCSB concepts and mutually exclusive (Hsieh & Shannon, 2005; Graneheim & Lundman, 2004). The team conducted directed content analysis of participants' responses (Hsieh & Shannon, 2005; Graneheim & Lundman, 2004) using theory-based coding categories. However, they did not force responses into these categories. This approach to analysis was useful for the team to see response patterns about the same concepts, yet about different SPBs--breast or cervical. For example, the team saw that participants' utility beliefs about treatments for breast and cervical cancers were similar and both reflected uncertainty.

In addition, the team who studied STIs applied the TCSB in their narrative and numeric analyses. Based on the TCSB concepts, the team created coding categories, for seeking and avoiding testing for directed content analysis of participants' text responses to open-ended questions (Neuendorf, 2011). If participants responded to an open-ended question about avoiding STI screening with "I am afraid of the results," the team coded this response as reflecting the concept of affect. The team also analyzed the frequency with which participants responded to short-answer questions about seeking and avoiding STI screening. The team was able to identify commonalities and differences across responses to short-answer responses --about seeking or avoiding screening-- more easily with concept-based responses. Similarly, the team was able to perceive commonalities and differences across text and numerical data because both were guided by TCSB concepts. Analyzing mixed-methods data by concepts facilitated a descriptive understanding of young adults' SPBs for STIs.

When researchers conduct directed content analyses, guided by theory, they may observe inconsistencies between the planned coding categories and their data. In this situation, researchers do not want to force data into coding categories if the two do not correspond well. Perhaps the theory is not valid in certain contexts. For the team who studied cancer SPBs among Hmong women, most data aligned with coding categories, but not all. Participants' narrative responses about the inadequate interpreter services at cancer screening sites did not align well with the category of "acceptable treatment by staff" reflecting one dimension of external conditions. The team decided to code responses about interpreter services separately because they were characteristically different from other responses coded in the category of "acceptable treatment by staff". Also, the policy and practice implications for these responses differed.

Theory also can guide researchers' tests about explanation or prediction. The team who tested an intervention about breast screening applied the TCSB in analyses and examined whether their tailored message group had the highest rates of SPBs. To do this, they created computer codes for each group to compare rates among the three message groups. Because the team also tested the proposition about whether the group effect on SPBs would be moderated by external conditions (see Figure 1), they created interaction terms to represent the multiplicative effect of group and external conditions. This approach was essential to test

the proposition about the moderating influences of external conditions on other explanatory variables (Triandis, 1979).

Phase 6: Reporting Study Results

When researchers summarize findings from a theory-guided study, they can use the components of the theory to organize their report and can help readers see how theory guided their study. In contrast, if researchers described their methods, analyses, and findings without references to the theory that guided them, then they would likely obscure how theory guided their studies. Two illustrations follow.

In their study of SPBs for STIs, researchers reported their findings from content analyses and from quantitative analyses by concepts in the TCSB. Alternatively, researchers could report their findings by which variables were most to least common findings. By reporting findings by concept, researchers could help readers recognize similarities and differences across the qualitative and quantitative data more efficiently. For example, habit reflected participants' responses to both short-answer and open-ended questions about engaging in SPBs for STIs. In the study of Hmong SPBs, researchers summarized findings by concept and by type of SPB (breast, cervical screening). By reporting these findings by concept, the team could facilitate readers' appreciation of similarities and differences by type of SPB.

Phase 7: Incorporating Theory in Summary Discussions

When researchers are guided by theory in their studies, they summarize their study findings in relation to prior evidence and theory. For example, if researchers found a concept, such as utility beliefs, was related positively to seeking SPBs, then they would discuss the support for the theory along with other evidence (Backonjaet al., 2014; Lauver et al., 2003; Lor et al., 2013). If researchers provide valid support for a theory in a given context, and they summarize their methods well, then future researchers could replicate and extend the earlier work relatively easily.

However, when findings do not support theory, then researchers can address critically whether the findings may be explained by either limitations of their methods, or of the theory, or both. If researchers provide adequate explications of how theory guided their methods in reports of studies where theory is not supported, then future researchers could design studies to examine whether the theory needs to be revised and if so, how. For example, two of our teams found that affect was relevant to SPBs (Backonja et al., 2014; Lor et al., 2013). However, the direction of the relationship between affect and screening differed by sample and context. Thus, future researchers can examine this relationship again to clarify how affect may influence screening, considering context, sample, and measures.

In summaries of studies, researchers discuss not only the implications of their findings for research but also for practice, education, and/or policy. The team who studied Hmong women summarized their work by sharing that inadequate interpreter services was an external condition that impeded Hmong women's use of SPBs for breast and cervical cancer. This team identified implications for both practice and organizational policies regarding the need for translation services in clinical settings.

Discussion

We have described how theory can be useful across phases of research in efforts to improve the applications of theories to studies of health-related phenomena and the descriptions of such applications in publications. We have exemplified how researchers can apply components of theory to research phases from three studies based on one theory. In doing so, we have addressed scholars' concerns about atheoretical research that had been conducted in nursing and other disciplines (Bartholomew & Mullen, 2011; Conn et al., 2008; Painter et al., 2008; Michie & Abraham, 2004; Rodgers, 2005).

We have explained how researchers can conceptualize carefully their clinical problems of interest, such as under-engagement in SPBs. When scholars are clear about the characteristics and correlates of such clinical problems, they may choose a fitting theory to guide their research. Because our three teams decided that both psychosocial concepts and external conditions were relevant to SPBs, our teams concluded that the TCSB would be adequate to guide our studies.

We have explained how researchers can use theory as a guide to organize or synthesize literature about a given phenomenon, even when prior researchers have not been guided by the same theory. In addition, we have explained how theory can guide aims and methods. We have exemplified how theory can guide methods (e.g., design, measures) from two descriptive studies and from one experimental study. We also have discussed and exemplified how theory can be applied in analyses with both narrative and numerical data.

We have discussed how researchers can apply theory in their reports. We have illustrated how researchers can report findings by theory components so readers can recognize similar findings across studies guided by the same theory or by similar concepts or propositions. When researchers can compare study findings by such components, then they may identify patterns more easily than if researchers did not report findings by such components. If authors were to organize their research reports about health-related phenomena in this manner, they could facilitate development of knowledge, either in support or refute of theory. Just as theory can guide research, so too can research findings guide either conclusions in support or revisions of theory.

In summary, when different researchers use the same theory to understand a health-related phenomenon, such as SPBs, then they could build knowledge more efficiently across their different studies than if they did not use the same theory. When authors explain in sufficient detail how they planned their aims and methods, guided by theory, in sufficient detail, then readers can perceive conceptual parallels or differences across studies (Bartholomew & Mullen, 2011; Rodgers, 2005; Meleis, 2012). Ultimately, when nurse researchers conduct theory-guided research carefully and delineate how they did so in their publications, then their research could inform nursing practice efficiently as well as add to our existing knowledge of describing, explaining, and predicting clinical problems.

Acknowledgements:

References

Balfe M, & Brugha R (2009). What prompts young adults in Ireland to attend health services for STI testing? BMC Public Health, 9(1), 311–319. doi:10.1186/1471-2458-9-311 [PubMed: 19709430]

Backonja U, Royer HR, & Lauver DR (2014). Young women's reasons to seek sexually transmitted infection screening. Public Health Nursing, 31(5), 395–404. 10.1111/phn.12125 [PubMed: 24766580]

Bartholomew LK, & Mullen PD (2011). Five roles for using theory and evidence in the design and testing of behavior change interventions. Journal of Public Health Dentistry, 71(s1), S20–S33. doi: 10.1111/j.1752-7325.2011.00223

Bayrami R, Taghipour A, & Ebrahimipour H (2014). Challenges of providing cervical cancer prevention programs in Iran: a qualitative study. Asian Pacific Journal of Cancer Prevention, 15, 10071–7. [PubMed: 25556428]

Centers for Disease Control and Prevention. (2010). Sexually transmitted diseases surveillance. Retrieved from http://www.cdc.gov/std/stats10/default.htm.

Centers for Disease Control and Prevention. (2012). Cancer screening—United States, 2010. Morbidity and Mortality Weekly Report, 61(3), 41–45. [PubMed: 22278157]

Chacko MR, von Sternberg K, Velasquez MM, Wiemann CM, Smith PB, & DiClemente R (2008). Young women's perspective of the pros and cons to seeking screening chlamydia and gonorrhea: an exploratory study. Journal of Pediatric and Adolescent Gynecology, 21(4), 187–193. [PubMed: 18656072]

Cody WK (1999). Middle-range theories: Do they foster the development of nursing science? Nursing Science Quarterly, 12(1), 9–14. [PubMed: 11847659]

Cohen L & Chehimi S (2007). Beyond brochures: The imperative for primary prevention In Cohen L, Chavez V, & Chehimi S (Eds.), Prevention is primary: Strategies for community well-being (pp. 3–24). San Francisco: Jossey-Bass.

Conn VS, Cooper PS, Ruppar TM, & Russell CL (2008). Searching for the intervention in intervention research reports. Journal of Nursing Scholarship, 40(1), 52–59. [PubMed: 18302592]

Facione N & Katapodi M (2000). Culture as an influence on breast cancer screening and early detection. Seminars in Oncology Nursing, 16(3), 238–247. [PubMed: 10967796]

Fawcett J (1978). Relationship between theory and research: A double helix. Advances in Nursing Science, 1(1), 49–62. [PubMed: 110219]

Goldkuhl G (2012). Pragmatism vs interpretivism in qualitative information systems research. European Journal of Information Systems, 21(2), 135–146.

Graneheim UH, & Lundman B (2004). Qualitative content analysis in nursing research: Concepts, procedures and measures to achieve trustworthiness. Nurse Education Today, 24(2), 105–112. [PubMed: 14769454]

Head SK, Crosby RA, Shrier LA, & Moore GR (2007). Young women's misperceptions about sexually transmissible infection testing: A 'clean and clear' misunderstanding. Sexual Health, 4(4), 273–275. [PubMed: 18082072]

Heit M, Blackwell L, & Kelly S (2008). Adapting the theory of care-seeking behavior to the clinical problem of urinary incontinence. Journal of Pelvic Medicine & Surgery, 14(1), 29–35.

Hsieh HF, & Shannon SE (2005). Three approaches to qualitative content analysis. Qualitative Health Research, 15(9), 1277–1288. [PubMed: 16204405]

Kobrin S (2011). The charge to advance theory and improve health outcomes. Journal of public health dentistry, 71(s1), S36. doi: 10.1111/j.1752-7325.2011.00229.x [PubMed: 21656949]

Lauver D (1992). A theory of care-seeking behavior. Image: The Journal of Nursing Scholarship, 24, 281–288. 10.1111/j.1547-5069.1992.tb00734.x [PubMed: 1452182]

Lauver DR, Settersten L, Kane JH, & Henriques JB (2003). Tailored messages, external barriers, and women's utilization of professional breast cancer screening over time. Cancer, 97, 2724–2735. 10.1002/cncr.11397 [PubMed: 12767084]

Lor M, Khang PY, Xiong P, Moua KF, & Lauver D (2013). Understanding Hmong women's beliefs, feelings, norms, and external conditions about breast and cervical cancer screening. Public Health Nursing, 30, 420–428. 10.1111/phn.12043 [PubMed: 24000914]

Meleis A (2012). A model for evaluation of theories, description, analysis, critique testing, and support In Meleis A (Eds.), Theoretical nursing: Development and progress (pp. 179–206). Philadelphia: Wolters Kluwer-Lippincott, Williams & Wilkins.

Michie S, & Abraham C (2004). Interventions to change health behaviours: evidence-based or evidence-inspired? Psychology & Health, 19(1), 29–49.

Michie S, Fixsen D, Grimshaw JM, & Eccles MP (2009). Specifying and reporting complex behaviour change interventions: The need for a scientific method. Implementation Science, 4(40), 1–6. [PubMed: 19123945]

National Committee for Quality Assurance. (2007). Improving Chlamydia screening: Strategies from top performing health plans. Retrieved from http://www.ncqa.org/LinkClick.aspx?fileticket=RouHq0Qy3II%3D&tabid=385&mid=1504&force-download=true

Neuendorf KA (2011). Content analysis—A methodological primer for gender research. Sex Roles, 64(3–4), 276–289.

Painter JE, Borba CP, Hynes M, Mays D, & Glanz K (2008). The use of theory in health behavior research from 2000 to 2005: A systematic review. Annals of Behavioral Medicine, 35(3), 358–362. [PubMed: 18633685]

Rogers BL (2000). Concept analysis: An evolutionary view In Rogers B & Knafl KA (2nd Eds.), Concept development in nursing: Foundations, techniques, and application (pp. 77–102). Philadelphia: WB Saunders Co.

Rodgers BL (2005). Modern science: Mirror of reality In Developing nursing knowledge: philosophical traditions and influences (pp. 83–96). Philadelphia: Lippincott Williams & Wilkins.

Rothman AJ (2004). "Is there nothing more practical than a good theory?": Why innovations and advances in health behavior change will arise if interventions are used to test and refine theory. International Journal of Behavioral Nutrition and Physical Activity, 1(1), 1–11. [PubMed: 15171788]

Sales A, Smith J, Curran G, & Kochevar L (2006). Models, strategies, and tools. Journal of General Internal Medicine, 21(S2), S43–S49. doi: 10.1111/j.1525-1497.2006.00362.x [PubMed: 16637960]

Satterwhite CL, Torrone E, Meites E, Dunne EF, Mahajan R, Ocfemia MC,…Weinstock H (2013). Sexually transmitted infections among US women and men: prevalence and incidence estimates, 2008. Sexually Transmitted Diseases, 40(3), 187–193. doi: 10.1097/OLQ.0b013e318286bb53. [PubMed: 23403598]

Sanders LS, Nsuami M, Cropley LD, & Taylor SN (2007). Reasons given by high school students for refusing sexually transmitted disease screening. Health Education Journal, 66(1), 44–57.

Smith MJ, & Liehr PR (2008). Understanding middle range theory by moving up and down the ladder of abstraction In: Smith MJ, & Liehr PR (Eds.), (2nd Eds.), Middle Range Theory of Nursing (pp. 13–30). New York: Springer.

Tao G, Hoover KW, & Kent CK (2012). Chlamydia testing patterns for commercially insured women, 2008. American Journal of Preventive Medicine, 42(4), 337–341. [PubMed: 22424245]

Tao G, Hoover KW, Leichliter JS, Peterman TA, & Kent CK (2012). Self-reported Chlamydia testing rates of sexually active women aged 15–25 years in the United States, 2006–2008. Sexually Transmitted Diseases, 39(8), 605–607. [PubMed: 22801342]

Thao YJ (2006). The Mong oral tradition: Cultural memory in the absence of written language. North Carolina: McFarland & Company, Inc.

Triandis HC (1979). Values, attitudes, and interpersonal behavior In Nebraska Symposium on Motivation. University of Nebraska Press, 195–259.

United States Department of Health and Human Services. (2013). Cancer. Retrieved from http://www.healthypeople.gov/2020/topicsobjectives2020/objectiveslist.aspx?topicId=5.

Weinstock H, Berman S, & Cates W (2004). Sexually transmitted diseases among American youth: incidence and prevalence estimates, 2000. Perspectives on sexual and reproductive health, 36(1), 6–10. [PubMed: 14982671]

Walker OW, & Avant KC (2005). Concept analysis: In Strategies for theory construction in nursing (3rd ed.), pp. 63–86. Norwalk, CT: Appleton & Lang.

Yang RC, Mills PK, & Dodge JL (2006). Cancer screening, reproductive history, socioeconomic status, and anticipated cancer-related behavior among Hmong adults. Asian Pacific Journal of Cancer Prevention, 7(1), 79–85. [PubMed: 16629521]

Clinical Resources

- Nursing theory: http://nursing-theory.org/index.php

- Middle-range theory for nursing: http://www.springerpub.com/samples/9780826119162_chapter.pdf

- Theory at a glance-A guide for health promotion practice: http://www.sbccimplementationkits.org/demandrmnch/wp-content/uploads/2014/02/Theory-at-a-Glance-A-Guide-For-Health-Promotion-Practice.pdf
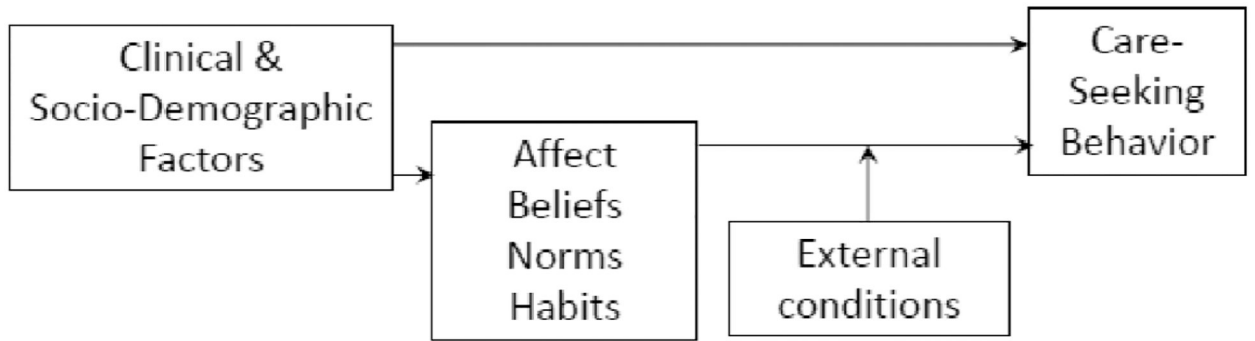
Figure 1.
Diagram of concepts and propositions in The Theory of Care Seeking Behavior.

Table 1

Concepts in the Theory of Care-Seeking Behavior

Concept	Definition	Examples
Affect	Feelings associated with care-seeking behavior.	Fear of seeking care. Feeling anxious about results of screening.
Utility	Overall worth of care seeking, expectations & values of seeking care.	Beliefs about the likelihood of care-seeking behavior yielding relevant outcomes.
Normative Influences	Personal, professional or peer opinions about care-seeking behaviors (e.g., secondary preventive behaviors).	Personal: One's beliefs about morally correct behavior regarding care seeking. Social: Friends' or family's beliefs about care seeking. Interpersonal agreement to act: Promise made with health care provider, friend, or family member to engage in care seeking.
Habits	One's usual care-seeking behavior, past experience with care seeking, or how one usually acts related to care seeking when one experiences symptoms.	Whether or not one seeks care promptly with symptoms. Whether one seeks asymptomatic screening (e.g., screening for sexually transmitted infections before starting new sexual relationship).
External conditions	Specific, objective, conditions that impact one's ability to seek care. Can reflect either facilitators or barriers.	Affordability (e.g., having insurance that covers cost of screening), accessibility (e.g., a screening facility is near one's home), acceptability (e.g., staff at screening facility are welcoming)

Table 2

Key characteristics of three different studies, guided by the Theory of care-seeking behavior (TCSB)

Study	Purpose(s)	Design	Sample	How addressed concepts from theory	Data Analysis
Cancer screening study among Hmong women (Lor, Khang, Xiong, Moua, & Lauver, 2013)	To understand Hmong women's underuse of breast and cervical cancer screening, guided by theory	Descriptive Cross-sectional	Group of 16 Hmong women, aged 24 to 73. Primary language for most participants was Hmong.	In a focus group, asked open-ended questions, based on concepts from theory. For each, we asked at least one question.	Conducted directed, content analysis of participants' responses. Coding categories were based primarily on TCSB concepts.
Sexually-transmitted infection screening study (Backonja, Royer, & Lauver, 2014)	To describe people's reasons to seek sexual transmitted infections (STIs) screening, guided by theory	Descriptive, Cross-sectional	330 college students, 216 female and 114 male; 18 years. Most were White and had never been screened for STIs.	Designed a questionnaire, based on concepts from theory. Asked closed-ended questions with checklists and open-ended. Asked at least one question.	Analyzed responses to closed-ended questions with descriptive statistics. Conducted directed, content analysis of participants' responses to open-ended questions. Coding categories were based primarily on TCSB concepts.
Cancer screening intervention study (Lauver, Settersten Kane, & Henriques, 2003)	To test effects of a nurse-delivered, patient-centered intervention, guided by concepts from theory, on women's breast screening behaviors. To assess whether intervention effects differed by external conditions, based on proposition from theory.	Randomized, control trial. Women assigned randomly to one of three message conditions (nothing initially, usual care, or tailored discussion, based on theory.) Example outcomes: Rates of clinical breast examination and mammography use. Collected data at 3 points in time: baseline, 3–4 months post-intervention, and 13–16 months post-intervention.	797 women recruited from 3 sources (a hospital including based radiology department serving low-income urban clients, and control participants from a case-control study). To control for habit, we excluded women who had had mammograms in prior 13 months.	Intervener served as a normative influence. Assessed and addressed concepts from theory (e.g., typical affect, utility beliefs, and norms) in tailored discussions with participants assigned to theory-based, message condition. Measured external conditions with questionnaire.	Conducted hierarchical regressions. Determined whether message condition influenced rate of breast cancer screening behaviors. Examined also whether degree of external conditions moderated rates of screening behaviors.