

Chapter 2

Theories Used in Nursing Research on Smoking Cessation

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ABSTRACT

Theories tell how and why things work; how and why one variable is related to another. Research findings that are theory based can be placed in a framework that advances science further than findings that are unconnected to formal theory. However, much of the research in smoking cessation is atheoretical. This review of nursing research on smoking cessation published from 1989 through 2008 revealed that nearly half of the studies were based on explicit formal theories. The transtheoretical model and self-efficacy theory were the most frequently used explicit theories with most theories emanating from psychology. Five nursing theories were identified in this review. Studies that used implicit rather than explicit theories dealt with five major concepts: nicotine dependence, social support, high-risk situations, mood-affect, and the influence of clinical diagnosis. Largely missing from this set of studies were investigations based on biobehavioral models, including genetics and neuroscience. The relevance of the theories and concepts identified in this review to current clinical guidelines on smoking cessation is discussed. With their grounding in theory and their expert knowledge of clinical issues, nurses are in an excellent position to develop theories that will help researchers in every discipline make sense of smoking cessation.

Keywords: smoking cessation; theoretical frameworks; transtheoretical model; self-efficacy theory; nursing theory

THEORIES USED IN NURSING RESEARCH ON SMOKING CESSATION

The purpose of this chapter is to identify the theories, theoretical frameworks, and conceptual models used in nursing research on smoking cessation. A theory has been defined as an abstract generalization that offers a systematic explanation of how variables are interrelated (Polit & Beck, 2008). Theories tell how and why things work; how and why one variable is related to another. Using formal theories, theoretical frameworks, or models (I'll use the terms interchangeably) allows you to take advantage of the thinking, the logic, and often the prior research of those who invent, espouse, and use the theories. Research findings that are theory based can be placed in a framework that advances science further than findings that are unconnected to formal theory.

Theories and Smoking Cessation

All research is guided by explicit or implicit theories. An explicit theory is one that the author acknowledges and describes. In this chapter, explicit theories are formal and have been developed and described previously. Implicit theories are informal and usually not described by the researcher. Implicit theories used in particular studies can be deduced from the variables chosen and from the relationships that are tested. Even though much smoking cessation research (done by both nurses and nonnurses) appears atheoretical, implicit theories are used to choose which of dozens of plausible variables should be selected for study. Sometimes the use of an implicit theory is necessary because no formal theory has yet been elaborated. Sometimes investigators are unaware of relevant formal theories. And sometimes investigators prefer the freedom to choose the variables they want to study without the constraints of formal theories. But when no formal theories are used, investigators rely on often unarticulated notions about which variables are important and that should be related. The problem with implicit theories is that they are easy to misunderstand and misinterpret. Sometimes the logic is problematic. Often, implicit theories are based on the implicit theories prior researchers assumed to be important but these implicit frameworks are not clearly articulated by either the prior or the current researcher. Although investigations that use implicit theories can make important contributions to the literature, they are more likely to stand as individual findings waiting to be incorporated into a systematic way of understanding the phenomena.

Using a formal, explicit theory offers no guarantee of success, however. Factors influencing smoking cessation include a large array of variables at many levels

of analysis: societal norms, community, family, individual, intraindividual, physiological, and molecular. No useful theory can manage all these levels. A theory is a map of the important features of a particular phenomenon. If your city map included every feature of the environment, it would be as big as your city and therefore useless. A useful map has the features you're interested in, at the right scale, and leaves out all the other details. Likewise, researchers must select theories that include only the variables that are crucial to explaining the phenomenon of interest. For a description of how a theory was selected, see the article by Froelicher and Kozuki (2002) who described their process of selecting and rejecting theories for an intervention study.

Testing Versus Using Theory

Research can employ theory in two different ways. You can test a theory and you can use a theory. You test a theory when your research is designed to see if the map is accurate. You test whether the relationships the theory posits actually hold true in the empirical world and sometimes you test the assumptions of the theory. When you use a theory, on the other hand, you are setting out to determine whether the theory does an adequate job of explaining a phenomenon of interest. In my own work on reversal theory and smoking (e.g., O'Connell, Gerkovich, & Cook, 1995), I did not want to test whether people reverse back and forth between metamotivational states as the theory posits. I assumed that such reversals happen. Instead, I wanted to use the theory to determine if specific metamotivational states could explain why people lapsed during highly tempting situations.

Intervention researchers in smoking cessation face the daunting task of testing a new intervention while attempting to address all the variables outside of the intervention that are thought to have an effect on success. Because no single theory has been developed that comprises all these factors, theory-based interventions often use more than one theory (e.g., Andrews, Felton, Wewers, Waller, & Tingen, 2007; Hilberink, Jacobs, Schlosser, Grol, & de Vries, 2006; Rowe & Clark, 1999). Noninterventional investigations about smoking and smoking cessation may be able to use more focused theories because researchers are not responsible for getting people to quit smoking but rather for trying to explain the relationships among variables (e.g., Bursey & Craig, 2000; Reynolds, Neidig, & Wewers, 2004).

METHOD

For purposes of this review, a literature search of the online version of *Index Medicus (Medline)* for articles appearing during the 20-year period of 1989 through 2008 that had the term *smoking cessation* in the abstract or title and with the limits on the search of English, nursing journals, and research (of various types) yielded a total of 345 articles. The list of articles was reviewed and articles were

excluded if they were research reviews, if they concerned nurses' attitudes about smoking or smoking cessation or nurses' plans to institute cessation programs. Also excluded were studies that primarily reported smoking prevalence rather than focusing on cessation behaviors or intentions. In order to focus on nursing research we limited the search to nursing publications. Most such journals have the term *nursing* in the title and publish research by or for nurses, but several journals (e.g., *Patient Education and Counseling*, *Journal of School Health*) include other disciplines besides nursing. The author list was reviewed for articles in these multidisciplinary journals and if any authors were nurses, the article was included in the analysis; if no nurse authors were identified, the article was excluded. After exclusions, a set of 137 articles were included in the analyses. This review excluded studies by nurse investigators published in nonnursing journals.

Each article was reviewed to determine whether the study was based on one or more formal theories. Table 2.1 lists the formal theories used and brief explanations of the theories along with citations to the relevant articles. Articles are listed in the table more than once if they reported using more than one of the formal theories. For articles that didn't use a formal theory, the concepts under study were reviewed to determine possible implicit theories. Concepts used by more than one study and possible implicit theories based on those concepts are listed in Table 2.2, along with the citations to the relevant articles. Articles are listed in the table more than once if they reported using more than one of the concepts listed on Table 2.1. However, Tables 2.1 and 2.2 are mutually exclusive. Articles using both formal theories and additional concepts not included in those theories are only listed in Table 2.1.

FINDINGS

The 137 studies included descriptive, qualitative, and correlational research as well as experimental studies. A total of 65 (47%) studies used one or more formal theories. Table 2.1 lists the 23 theories used in the studies, brief synopses of the theories, and articles that used these theories. Five of the theories are nursing theories and 18 are nonnursing theories. Two of the nursing theories are considered grand theories: the Roy adaptation model (Roy & Andrews, 1999) and the Orem self-care deficit theory (Orem, 1995), while transition theory (Meleis, 1997; Meleis, Sawyer, Im, Messias, & Schumacher, 2000), the interaction model of client behavior (Cox, 1982) and Mercer's stages of becoming a mother (Mercer & Mercer, 2004) are considered middle-range theories (McEwen & Wills, 2007). Among the nonnursing theories, reversal theory (Apter, 1982, 1989), Smuts holistic theory (cited in Lindberg, Hunter, & Kruszewski, 1990), and Lewin's field theory (Chaney & Hough, 2005), would be considered grand theories, while the remaining would be considered middle-range theories.

TABLE 2.1 Formal Theories Guiding Nursing Research About Smoking Cessation

Named Theoretical Frameworks	Description of Theory–Model	Studies Using Theory–Model
<p>1a. Transtheoretical model (Prochaska & DiClemente, 1983; Prochaska et al., 1994)</p> <p>This group of studies focused on stages of change only.</p>	<p>Individuals are characterized at different stages of readiness for behavior change. The stages are:</p> <ul style="list-style-type: none"> • Precontemplation • Contemplation • Preparation • Action • Maintenance 	<p>Andrews, Felton, Wewers, Waller, & Humbles, 2005 Attebring et al., 2004 Chalmers et al., 2004 Clarke & Aish, 2002 DeJong, Veltman, DeJong, & Veltman, 2004 Efraimsson, Hillervik, & Ehrenberg, 2008 Hilberink et al., 2006 Hokanson, Anderson, Hennrikus, Lando, & Kendall, 2006</p>
<p>1b. Transtheoretical model This group of studies used both stages and processes of change</p>	<p>Individuals at each stage are hypothesized to use different processes of change. Ten different processes are identified.</p>	<p>Jonsdottir, Jonsdottir, Geirsdottir, Sveinsdottir, & Sigurdardottir, 2004 Koivula & Paunonen, 1998 Reeve, Calabro, & Adams-McNeill, 2000 Rowe & Clark, 1999 Sharp & Tishelman, 2005 Shuster, Utz, & Merwin, 1996 Wilson, Fitzsimons, Bradbury, & Stuart Elborn, 2008 Andersen & Keller, 2002 Andrews et al., 2007 Scheibmeir, O’Connell, Aaronson, & Gajewski, 2005 Ward, 2001 Webb, 2008</p>

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TABLE 2.1 Formal Theories Guiding Nursing Research About Smoking Cessation (*Continued*)

Named Theoretical Frameworks	Description of Theory—Model	Studies Using Theory—Model
<p>1c. Transtheoretical model This group of studies used stages and processes of change and decisional balance</p>	<p>Individuals at each stage vary in their decisional balance, for example, perceptions of the pros and cons of smoking and quitting.</p>	<p>Chouinard & Robichaud-Ekstrand, 2005 Fritz, Hardin, Gore, & Bram, 2008 Ham, 2007 Ham & Lee, 2007 Keller & McGowan, 2001 Kelley, Thomas, & Friedmann, 2000 Kim, 2006 Macnee & McCabe, 2004 Macnee & Talsma, 1995b Ridner & Hahn, 2005</p>
<p>2. Self-efficacy theory (Bandura, 1977, 1997)</p>	<p>Part of social cognitive theory, but also considered a theory unto itself. Self-efficacy is the extent to which one sees oneself as capable of performing a specific behavior. Sources of self-efficacy are:</p> <ul style="list-style-type: none"> • vicarious experience (modeling) • mastery experiences • persuasion • physiological arousal recognition and control. 	<p>Andrews et al., 2005 Andrews et al., 2007 Buchanan & Likness, 2008 Chen & Yeh, 2006 Condon, 1997 Fritz et al., 2008 Ham & Lee, 2007 Froelicher & Christopherson, 2000 Gaffney & Henry, 2007 Gulick & Escobar-Florez, 1995 Haddock & Burrows, 1997 Ham, 2007 Hilberink et al., 2006</p>

- Hokanson et al., 2006
 Johnson, Budz, Mackay, & Miller, 1999
 Kim, 2008
 Kim, 2006
 Kowalski, 1997
 Martin, Froelicher, & Miller, 2000
 Wang, Harrell, & Funk, 2008
- Clark, Haverly, & Kendall, 1990
 Conrad, Campbell, Edington, Faust, & Vilnius, 1996
 Haddock & Burrows, 1997
 Hilberink et al., 2006
 Marshall, 1990
 Rowe & Clark, 1999
- Clarke & Aish, 2002
 Price, 1992
- Clarke & Aish, 2002
 Gulick & Escobar-Florez, 1995
 Haddock & Burrows, 1997
- Burseay & Craig, 2000
 Hilberink et al., 2006
 Kim, 2008
 Wilson et al., 2008
 Winkelstein & Feldman, 1993
3. Health belief model (Becker & Maiman, 1975; Janz & Becker, 1984)
 Performing a health behavior is a function of the degree of the perceived threat, measured as perceived severity of the illness to be prevented and perceived susceptibility to the illness; and perceived benefits of the behavior; perceived barriers to the behavior; and the existence of a cue to action.
4. Expected utility theory (Keeney, 1982)
 Expectations of the risks and trade-offs to health both for making the behavior change and for not making the change.
- 5a. Theory of reasoned action (TRA; Ajzen & Fishbein, 1980)
 Behavior is predicted by intention to carry out the behavior. Intention is a function of the attitudes toward the behavior and the subjective norms with respect to the behavior.
- 5b. Theory of planned behavior (TPB; Ajzen, 1991)
 Theory of planned behavior adds the element of perceived behavioral control to the theory of reasoned action.

TABLE 2.1 Formal Theories Guiding Nursing Research About Smoking Cessation (*Continued*)

Named Theoretical Frameworks	Description of Theory—Model	Studies Using Theory—Model
6. Relapse prevention model (Marlatt, 1985)	Relapse prevention is promoted by avoiding high-risk situations and by effective coping responses and confidence in coping ability when presented with high-risk situations. Decreased confidence and ineffective coping leads to initial lapses; internal and stable attributions and guilt for the lapse lead to further use and relapse.	Froelicher & Christopherson, 2000 Gaffney & Henry, 2007 Gaffney, Henry, Douglas, & Goldberg, 2008 Johnson, Ratner, Bottorff, Hall, & Dahinten, 2000 Lillington, Royce, Novak, Ruvalcaba, & Chlebowski, 1995
7. Reversal theory (Apter, 1982, 1989)	Individuals are inherently inconsistent; they reverse back and forth between opposing states of mind. Motivations differ depending on the state of mind.	Burriss & O'Connell, 2003 Cook, Gerkovich, O'Connell, & Potocky, 1995 O'Connell et al., 1995
8. Health locus of control (Wallston, 2001; Wallston, Wallston, & DeVellis, 1978)	The causes for health and illness are attributed to internal, powerful others, and chance factors.	Leong, Molassiotis, & Marsh, 2004
9. Social stress model of substance abuse (Lindenberg, Reiskin, & Gendrop, 1994)	Engaging in drug abuse is a function of stress, social networks, social competence, and resources.	Jesse, Graham, & Swanson, 2005
10. Illness representation model (Leventhal, Leventhal, & Cameron, 2001)	Health and illness behaviors are influenced by the individual's perceptions of the cause, consequences, timelines, and duration of the illness in question.	Reynolds et al., 2004

11. Smuts holistic theory cited in Lindberg et al. (1990)	Biophysical, cognitive, psychological, and social systems interrelate with each other.	Kowalski, 1997
12. Lewin's field theory with emphasis on change (Chaney & Hough, 2005)	Driving forces (hopes and emotional investments) and restraining forces (past and future elements inhibiting event) affect group change.	Chaney & Sheriff, 2008
13. Integrated change model (I-change; encompasses theory of planned behavior, self-efficacy, transtheoretical model, health belief model, goal setting and task performance (Locke & Lathan, 1990), and implementation intentions (Gollwitzer, 1999)	Behavior change involves three phases: premotivational, motivational, and postmotivational. Four types of factors determine phase: behavioral, psychological, biological, and sociocultural.	Hilberink et al., 2006
14. Jessor's problem behavior theory (Jessor, Donovan, & Costa, 1992)	Adolescents' cognitions, attitudes, and expectations of social behaviors influence the adoption and continuation of problem behaviors such as smoking.	Albrecht et al., 2006
15. Cognitive behavior theory (Beck, Wright, Newman, & Sliese, 1993)	Strategies to decrease self-defeating behavior, alter maladaptive perceptions, set goals, control urges, and garner social support are crucial to behavior change.	Albrecht et al., 2006
16. Self-determination theory (Ryan & Deci, 2000)	Intrinsic motivation and autonomy are crucial for behavior change.	Bottrorff et al., 2004
17. Theory of behavior modification (Green & Kreuter, 1991)	Behavior change is affected by predisposing factors, such as attitudes, enabling factors, and reinforcing factors.	Koivula & Paunonen, 1998

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TABLE 2.1 Formal Theories Guiding Nursing Research About Smoking Cessation (*Continued*)

Named Theoretical Frameworks	Description of Theory–Model	Studies Using Theory–Model
18. Transactional model of stress (Lazarus, 1966)	Reactions to stressors are determined by cognitive appraisals of the stressor. Primary appraisal involves evaluating whether an event is a threat; secondary appraisal involves evaluation of resources for coping with the event.	Macnee & Talsma, 1995a
Nursing Theories		
1. Mercer's stages of becoming a mother (Mercer & Mercer, 2004)	Four stages: (1) commitment, attachment, and preparation (pregnancy); (2) acquaintance, learning, and physical restoration (2 to 6 weeks postpartum); (3) moving toward a new normal (2 weeks to 4 months); (4) achievement of maternal identity (around 4 months).	Gaffney & Henry, 2007 Gaffney et al., 2008
2. Orem self-care deficit theory (Orem, 1995)	People maintain life and well-being by caring for themselves. Comprises three theories: self-care deficits, self-care, nursing systems.	Utz, Shuster, Merwin, & Williams, 1994

<p>3. Roy adaptation model (Roy & Andrews, 1999)</p>	<p>A person is an adaptive system with input (focal, residual, and contextual stimuli), control processes (regulator and cognator), effectors (physiologic, self-concept, role function, and interdependence), and output (adaptive and ineffective responses).</p>	<p>Villareal, 2003</p>
<p>4. Interaction model of client behavior (Cox, 1982)</p>	<p>Health outcomes are influenced by elements of client's singularity (e.g., previous experience, intrinsic motivation, affective responses) and the client-provider relationship (e.g., affective support, decisional support, professional competence).</p>	<p>Rice et al., 1994</p>
<p>5. Meleis transition theory (Meleis, 1997; Meleis et al., 2000)</p>	<p>A transition is a change in health status, role relationships, expectations, or abilities. Transitions may involve perceptions of disconnectedness, temporary loss of familiar reference points, new needs, or unmet needs and vulnerability to risks.</p>	<p>Sharp & Tishelman, 2005</p>

TABLE 2.2 Frequently Used Concepts and Possible Implicit Theories in Smoking Cessation Studies Not Using Formal Theories

Major Concepts	Possible Implicit Theories	Studies Using Concepts
1. Nicotine Dependence		
1a. Nicotine dependence	There are racial differences in dependence.	Ahijevych & Gillespie, 1997, Huang, Lin, & Wang, 2006
	Smoking to cope with stress leads to increased dependence.	Ahijevych & Wewers, 1993
	Secondhand smoke leads to nicotine dependence. Dependence influences quitting.	Okoli, Browning, Rayens, & Hahn, 2008, Green & Clarke, 2005
1b. Nicotine replacement therapy or pharmacotherapy	Because nicotine is addictive, success at quitting is increased by using pharmacotherapy to replace nicotine or to mimic its effects.	Browning, Ahijevych, Ross, & Wewers, 2000 Challis & Surgenor, 2004 Chou, Chen, Lee, Ku, & Lu, 2004 Jonsdottir & Jonsdottir, 2001 Kuzecz & Prochazka, 1996 Mahrer-Imhof, Froelicher, Li, Parker, & Benowitz, 2002 Reilly, Murphy, & Alderton, 2006 Tonstad, 2006 Van Dongen, Kriz, Fox, & Haque, 1999 Wakefield, Olver, Whitford, & Rosenfeld, 2004 Wewers, Neidig, & Kihm, 2000
2. Social Support		
2a. Support from nurses	Support for cessation from nurses including interventions by nurses improves quit rates.	Browning et al., 2000 Challis & Surgenor, 2004 Clark, Rowe, & Jones, 1993 Gebauer, Kwo, Haynes, & Wewers, 1998 Gies, Buchman, Robinson, & Smolen, 2008 Grossman, Donaldson, Belton, & Oliver, 2008

		Jiang, Sit, & Wong, 2007 Jonsdottir & Jonsdottir, 2001 McDaniel, 1999 Racelis, Lombardo, & Verdin, 1998 Wewers et al., 1994 Wewers, Jenkins, & Mignery, 1997
2b. Other health care provider support	Support for cessation from health care providers improves quit rates.	de Vries, Bakker, Mullen, & van Breukelen, 2006 Echer & Barreto, 2008 Helyer et al., 1998 McLeod et al., 2004
2c. Partner–family support	Partner and family support helps improve quit rates.	Echer & Barreto, 2008 Holmes, 2001 McLeod et al., 2004 Winkelstein, Tarzian, & Wood, 1997
2d. Support groups and peer support	Peer support helps quit rates.	Albrecht, Payne, Stone, & Reynolds, 1998 Echer & Barreto, 2008 Helyer et al., 1998 Huang, 2005 Reilly et al., 2006 Van Dongen et al., 1999

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TABLE 2.2 Frequently Used Concepts and Possible Implicit Theories in Smoking Cessation Studies Not Using Formal Theories (*Continued*)

Major Concepts	Possible Implicit Theories	Studies Using Concepts
3. High-risk Situations		
3a. Strategies for coping with cravings	Use of coping strategies during high-risk situations improves success at quitting.	Browning et al., 2000 Clark et al., 1993 Cobb, Bott, & O'Connell, 1997 Griebel, Wewers, & Baker, 1998 Helyer et al., 1998 Huang, 2005 Jannone & O'Connell, 2007 Jonsdottir & Jonsdottir, 2001 O'Connell et al., 1998 O'Connell et al., 2006 Stanislaw & Wewers, 1994 Steuer & Wewers, 1989 Van Dongen et al., 1999 Wewers et al., 1994 Wewers et al., 2000
3b. Environmental cues, including partner or family smoking	Smoking cues engender cravings and lead to lapses during cessation.	Lemola & Grob, 2008 McLeod et al., 2004 Miller, Rarner, & Johnson, 2003 Snyder, McDevitt, & Painter, 2008
4. Affect-Mood		
4a. Anxiety and psychiatric symptoms	Anxiety and psychiatric symptoms increase relapse.	Chou et al., 2004

4b. Stress	Stress increases smoking.	Mackey, McKinney, & Tavakoli, 2008 Snyder et al., 2008
	Stress increases relapse.	Cummins, Trotter, Moussa, & Turham, 2005 Miller et al., 2003
	Interventions to reduce stress will prevent relapse.	Helyer et al., 1998 Wynd, 1992 Wynd, 2005
5. Influence of Diagnosis		
5a. Diabetes	Severity of diabetes affects willingness to quit.	Haire-Joshu et al., 1995
5b. Heart	Gender and age affects likelihood of continued smoking.	Conn, Taylor, & Abele, 1991
5c. Lung disease	Feedback on decline in lung function increases likelihood of quitting. Lung cancer diagnosis affects willingness to quit.	Wells & de Lusignan, 2003 Sarna, 1995 Wewers et al., 1997
5d. Pregnancy	Pregnancy affects willingness to quit. Age and socioeconomic status affect pregnant smokers' willingness to quit.	Edwards & Sims-Jones, 1998 Allnutt & Reid, 1999 Pletsch & Johnson, 1996 Tod, 2003
5e. Mental illness	Serious mental illness makes cessation more difficult.	Snyder et al., 2008

The most frequently cited theory was the transtheoretical model (TTM; Prochaska et al., 1994), which was used in 30 of the studies. As is often the case, some investigators used only parts of major theories. This phenomenon was especially true of the TTM with 50% of the studies using only the stages of change portion of the model, while others added processes of change and still others used the full model, which includes decisional balance (measures of the perceived pros and cons to smoking) as a factor. Self-efficacy theory (Bandura, 1997), the second most popular theory, was used in 20 reports.

Theories generally under the category of expected utility theories were frequently mentioned. These include the health belief model (six times) along with the theory of reasoned action and its close cousin the theory of planned behavior (used eight times collectively). Two studies reported using another more general expected utility model. Marlatt and Gordon's (1985) relapse prevention model was used five times. All other theories, including the nursing theories, were used in only one study or by a single group of investigators in two or three studies.

Table 2.2 lists the major concepts measured or operationalized in the articles that did not report using formal theories. Also listed are possible implicit theories used in the articles along with citations to the 55 relevant articles. Five major classes of concepts were identified: (1) nicotine dependence, (2) social support, (3) high-risk situations, (4) affect–mood, and (5) influence of diagnosis.

Nicotine Dependence

Of the 16 studies that used concepts of nicotine dependence, some studied the concept directly (e.g., Ahijevych & Gillespie, 1997), but most used it in relation to supplying nicotine replacement therapy to smokers in the interventions tested. Research on withdrawal symptoms were included in this category.

Social Support

The most frequently used concept (26 studies) was the concept of social support, including family and partner support, peer support, nurse, and other health care provider support. In some cases, clinicians provided brief support interventions (e.g., McDaniel, 1999). In other studies clinician support was more intense (e.g., Wewers, Bowen, Stanislaw, & Desimone, 1994).

High-Risk Situations

The third major set of concepts centered on resisting smoking in high-risk situations characterized by increased craving or increased probability of lapsing (19 studies). Fifteen of the articles focused on specific strategies for coping, while four focused on the triggers for high-risk situations, such as smoking cues.

Affect–Mood

The fourth class of concepts was related to affective symptoms other than withdrawal symptoms such as anxiety and stress as they relate to quitting and relapse (eight studies), with some reporting on interventions to reduce stress (e.g., Helyer, Brehm, Gentry, & Pittman, 1998; Wynd, 2005).

Influence of Diagnosis

The influence of the clinical diagnoses of the smoker constituted the fifth major concept (10 studies). Some studies posited that clients with specific diagnoses would be more likely to quit, such as those with declines in lung function (Wells & de Lusignan, 2003) or those who were pregnant (Edwards & Sims-Jones, 1998). However, other studies showed that diagnoses seem to complicate quitting (e.g., Haire-Joshu, Ziff, & Houston, 1995; Sarna, 1995).

The remaining 17 studies in the data set neither used a formal theory nor one of the five concepts in Table 2.2. These studies concerned a disparate group of concepts that were unique or idiosyncratic in this data set. Some referred to characteristics of interventions studied (e.g., Dino et al., 2001; Higgs, Edwards, Harbin, & Higgs, 2000), while others referred to individual differences among the participants in the samples (e.g., Stewart et al., 1996; Wynd, 2006)

DISCUSSION

This review revealed that a sizable number (nearly half) of nursing research studies on smoking cessation are based at least in part on formal theories. Some reports use only parts of these theories. For instance, many use only the stages of change concept in the transtheoretical model with little attention to the processes of change or to the balance of pros and cons that characterize different stages. This partial use of theories may be necessary in some investigations, especially when the theory is complex and not primarily focused on behavior change. But in the case of the TTM, which is focused on behavior change, it is possible that researchers were only superficially aware of the model and tended to focus on its easiest-to-understand feature, the stages of change. Nevertheless, using formal theories or parts of them grounds a study in the logic of the theory and connects it to other studies that are grounded in the same logic. Results of such investigations can be used to support or refute the premises of such theories and enable subsequent researchers to judge the usefulness of these systems of thought.

The use of nursing theories in smoking cessation research was relatively rare. This is understandable because nursing theories are usually grand theories that do not lend themselves to the specific issue of smoking cessation or of behavior

change. Nevertheless, it is possible that nursing theories may be able to explain some phenomena in smoking. For instance, Gaffney and Henry (2007) used Mercer's theory of becoming a mother (Mercer & Mercer, 2004) to explain the smoking behavior of pregnant and postpartum women. Many women quit smoking when they get pregnant, remaining smoke free for many months, but the majority of them relapse shortly after delivery. Gaffney and Henry sought to use the stages of becoming a mother to explain this phenomenon (2007).

Of the 23 formal theories identified in this review, 17 were used in single studies or by a single group of authors. Thus, except for the mainstream psychological theories represented by the TTM and self-efficacy theory, it does not appear that there is much spread of the theories to other researchers. The reasons for this insularity of theory use are unclear. Because smoking cessation research is a multidisciplinary phenomenon, nurse researchers are required to be familiar with a wide array of disciplinary approaches and probably tend to look outside of nursing literature for ideas about smoking. Moreover, it is only in the last few years that research on smoking cessation has become more common in nursing. In a previous review of research on smoking published between 1981 and 1987 (O'Connell, 1990), I found only 23 studies published in nursing journals, an average of 3.3 studies per year, compared to the average of 6.8 studies per year for the 20 years reviewed in this chapter.

Implicit theories were used in 53% of the studies reviewed in this chapter. The problem with implicit theories is that the exact postulates of the theories remain unclear and the hypotheses derived from them vary according to the investigators' understanding of the concept. Moreover, an in-depth understanding of the concepts under investigation is often precluded by the failure to elaborate and use more formal theories. For instance, if we posit that the implicit theory behind nicotine replacement therapy is: *Because nicotine is addictive, success at quitting is increased by using pharmacotherapy to replace nicotine or to mimic its effects*, how does this implicit theory help us guide the use of the therapy? Why is the recommended therapy time limited? Using the methadone treatment model for heroin addiction, shouldn't we give the smoker supplemental nicotine for a longer period of time than the 6 to 12 weeks that is recommended for nicotine replacement therapy? Does the addiction go away? How should patients deal with coming off nicotine replacement therapy? Obviously, a more elaborated theory of nicotine dependence and its treatment is needed. Sometimes research using implicit theory is useful; nicotine replacement therapy has been shown to be so valuable that it has become a standard of care in clinical guidelines. But our understanding of the reason it works, for whom it works, and why it frequently fails is hampered by the lack of a formal theory about the role of replacement in nicotine dependence. Genetic and neuroscience models (e.g., Portugal & Gould, 2008; Stevens et al., 2008) appear underutilized in the research reviewed here and may be useful in contributing to a theory of nicotine dependence.

For some investigations, no formal theories appear appropriate. Such studies might be termed atheoretical or pretheoretical. My own work on coping strategies (O'Connell et al., 1998; O'Connell, Hosein, & Schwartz, 2006) is an example of pretheoretical research. These studies were carried out in hopes of differentiating effective from ineffective strategies, a finding that could have led to a theory of coping with temptations similar to the stress coping theory proposed by Lazarus and Folkman (1984), which differentiated problem-focused and emotion-focused coping. However, the results of my studies gave little indication that strategies were differentially effective or differentially appropriate—one seemed to be as good as another. I regard these findings as contributing to a theoretical framework that has yet to be developed.

The TTM was the most frequently used theory in this group of studies. Indeed, the TTM is widely used in addiction research. However, a number of authors have questioned the utility of the stage concept of the TTM (e.g., Balmford, Borland, & Burney, 2008; West, 2005), suggesting that stages are neither useful nor predictive. Although proponents of the model have vociferously defended it (Prochaska, 2006), the most recent clinical guideline for smoking cessation (Fiore et al., 2008) does not specifically recommend using the model to guide interventions. The guideline suggests that clinicians offer every tobacco user at least a brief intervention without mention of matching the intervention to stage of change.

The guideline (Fiore et al., 2008) does recommend social support, nicotine replacement therapies, and training in problem solving and coping skills, concepts (not theories) that were frequently used in the nursing research studies reviewed here. The interest of nurse researchers in social support is evident in this review, which identified 26 studies as using this concept. Social support might be a particularly fruitful avenue for theory development by nurse researchers, but it is clear that the theory must go beyond the implicit theory that interventions delivered by nurses are especially effective. What is it about the nurses' activities that increase effectiveness? Is it specific knowledge of the client? Is it clinical expertise? Is it accessibility? A theory about social support in behavior change is clearly needed.

Limitations

This review has several limitations. First, the research published by nurses in nonnursing journals is not reviewed. The difficulty of identifying such research and in determining who is a nurse in nonnursing publications is the main reason for this exclusion. Nevertheless, most veteran nurse researchers tend to publish their work both inside and outside of nursing. While all their work is not represented, it is fair to conclude that some of the work has been considered here. Secondly, my literature search method and exclusion procedure may have missed important studies that should be in the sample. Third, the studies that were

categorized as using formal theories may also have used additional implicit theories. I preferred to keep the studies where only implicit theories were used separate to make interpretation easier. For instance, implicit theories concerning affective symptoms, such as depression, were used in some theory-based studies, but such studies were not included in Table 2.2. This practice reduced the number of studies in each category of implicit theories. Finally, recognition and interpretation of implicit theories depended on my judgment, which may have been faulty. (But misinterpretation is the problem with implicit theories!)

SUMMARY

This review has shown that nursing research on smoking cessation during the last 20 years is frequently guided by formal theories. Although I have not done a similar review of nonnursing research, I suspect that nursing research on smoking cessation may use formal theories more frequently than nonnursing research on smoking cessation. Nursing education may emphasize theory more than many disciplines, leading nurses to at least acknowledge the need for theory in their investigations. For instance, in their nursing research methods text, Polit and Beck (2008) devote an entire chapter to theory, while nonnursing research methods texts such as those by Locke, Silverman and Spirduso (2004) and by Cherulnik (2001) appear to exclude it from consideration. The TTM and self-efficacy theory were the dominant formal theories used in research on smoking cessation. Implicit theories tended to center around issues with nicotine dependence and social support. Largely missing from this set of studies were investigations based on biobehavioral models, including genetics and neuroscience.

IMPLICATIONS FOR FUTURE RESEARCH AND POLICY

Future nursing research in smoking cessation should be grounded in well-articulated theories. Coherent stories are crucial to policy. Few policy makers can convert a plethora of scientific findings into the focused messages that are needed to lobby for changes in smoking-related laws and health care policies. Well-articulated theories tend to organize findings in a way that tells a coherent story about a phenomenon and can be much more understandable and interpretable to policy makers than disparate empirical findings.

Theories used in the sample of studies reviewed here tend to be those generated by psychologists. However, nurses who are experts in smoking cessation have a valuable perspective, especially with respect to patient populations who need to quit smoking. In addition, school nurses and community health nurses may have important contributions to make in understanding community and

environmental variables affecting smoking uptake and relapse. Isn't it time that nurse experts generate well-articulated theories for psychologists (and other disciplines) to use? With their grounding in theory and their expert knowledge of clinical issues, nurses are in an excellent position to develop theories—to draw the maps—that will help researchers in every discipline make sense of smoking cessation.

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