

NURSING STUDENT TRAINING, PERCEPTION, AND BEHAVIOR IN TOBACCO
CESSATION COUNSELING: A RANDOMIZED EXPERIMENTAL STUDY

A DISSERTATION

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GAIL F. GRAHAM, B.A., B.S.N., M.S.

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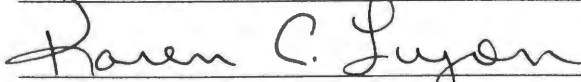
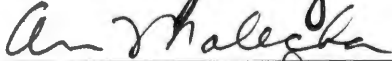
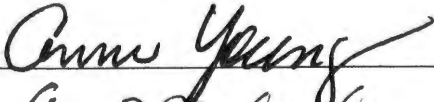
To the Dean of the Graduate School:

I am submitting herewith a dissertation written by Gail F. Graham entitled "Nursing Student Training, Perception, and Behavior in Tobacco Cessation Counseling: A Randomized Experimental Study." I have examined this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy with a major in Nursing Science.



Rae Langford, Ed.D., Major Professor

We have read this dissertation and recommend its acceptance:



Associate Dean, College of Nursing

Accepted:



Dean of the Graduate School

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ABSTRACT

GAIL F. GRAHAM

NURSING STUDENT TRAINING, PERCEPTION, AND BEHAVIOR IN TOBACCO CESSATION COUNSELING: A RANDOMIZED EXPERIMENTAL STUDY

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A randomized experimental two-group repeated measures design was employed in this study using Bandura's self-efficacy learning theory as the theoretical foundation. The main purpose of this research was to study whether the student nurses in the experimental group receiving the *Rx for Change* tobacco-cessation training could increase their general self-efficacy and frequency of counseling behaviors at two-weeks and eight-weeks post-training compared to the student nurses in attention control training. With a response rate of 95%, 130 student nurses comprised the sample. A mixed model ANOVA found a significant interaction between group type and time, $F(1,128) = 17.654, p < .000$. Self-efficacy for the experimental group improved over time while those in the control group experienced a drop in self-efficacy. Six independent-sample *t*-tests were also used to test differences in the number of counseling behaviors between the two groups. A Bonferroni correction factor set the alpha at .008. Total tobacco-counseling minutes were significantly more for the experimental group: [$t(128) = 2.65, p = .009$]. The *t*-tests for the five tobacco-counseling behaviors revealed no significant differences between the control and experimental groups. In summary, the experimental group had

higher general self-efficacy scores at the end of the 10-week clinical semester than the control group, and also spent more time in the tobacco counseling behaviors. This study demonstrated the efficacy of using a three-hour *Rx for Change* Internet tobacco-educational intervention on improving student nurses' self-efficacy and time commitment in their clinical rotations. These findings can broaden nurse educators understanding that by using evidence-based practice guidelines as a teaching modality via the Internet, improvements can be seen in student self-efficacy and time commitment in their clinical behaviors.

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CHAPTER I

INTRODUCTION

Tobacco use remains the leading cause of preventable morbidity and mortality in the United States resulting in 443,000 premature deaths each year (Center for Disease Control [CDC], 2008). Specifically, cigarette smoking results in one in five deaths each year, which is more deaths than AIDS, alcohol, cocaine, heroin, homicide, suicide, motor vehicle accidents, and fires combined (CDC, 2008). Smoking exacts a total economic burden of approximately \$193 billion per year whereas investments in tobacco prevention and smoking cessation programs in fiscal year 2007 totaled \$595 million (CDC, 2008). Smokers tend to incur more medical costs, see health care providers more often, and be admitted to hospitals for longer periods than nonsmokers (Rigotti, Munafo, & Stead, 2007). However, investment in smoking cessation programs can lead to improved health outcomes (Fiore et al., 2008) and lower health care costs (Maciosek et al., 2006).

All health care providers (HCPs) have a critical role in reducing tobacco-related costs, complications, and deaths through tobacco-cessation counseling (US Department of Health and Human Services [USDHHS], 2000a). Interventions to improve tobacco-cessation have been extensively studied since 1996 (USDHHS, 2000a); these interventions provide a response to the Healthy People 2010 tobacco-related objectives (USDHHS, 2000b), and have been standardized in clinical practice guidelines (Fiore et al., 2008). The 2008 updated guideline, *Treating Tobacco Use and Dependence*, was

developed from available scientific literature on tobacco-cessation (Fiore et al.), and emphasizes that tobacco use presents a rare convergence of three conditions: the United States' number one public health threat in terms of cost, health, and death consequences (CDC, 2008; USDHHS, 2004); a disinclination among clinicians to intervene (Rothemich et al., 2008); and the presence of effective interventions (Fiore et al.). There is overwhelming evidence of this last point: even brief three-minute clinician interventions reduce tobacco-related disease and enable the smoker to quit (Fiore et al.).

However, the core of the guidelines, tobacco use assessment and smoking cessation assistance, is conducted in only one-half to two-thirds of patient visits and is provided at only one-fifth of smokers' visits respectively (Ellerbeck, Ahluwalia, Jolicoeur, Gladden, & Mosier, 2001; Thorndike, Rigotti, Stafford, & Singer, 1998). Although the U.S. Agency for Healthcare Research and Quality (AHRQ) has actively promoted smoking cessation training for all health care providers (USDHHS, 2000a), these providers often have limited knowledge about smoking cessation intervention strategies (Coleman, Murphy, & Cheater, 2000; Spangler, George, Foley, & Crandall, 2002). Limited knowledge contributes to poor assessment rates for identifying tobacco users and thus a failure to advise and assist current smokers in meaningful interventions (Hughes, 2000). Moreover, lack of HCPs' perceived sense of self-efficacy has been linked to failure of effective interventions (Anderson, Jorenby, Scott, & Fiore, 2002; Batra, Patkar, Weibel, & Leone, 2002).

Nurses, the largest group of HCPs, are in a unique position to address patient tobacco use. In spite of this, numerous studies reveal that nurses are also not adequately prepared to perform tobacco-cessation interventions (Heath & Andrews, 2006; Heath, Andrews, Thomas, Kelley, & Friedman, 2002; Hornberger & Edwards, 2004; Kraatz, Dudas, Frerichs, Paice, & Swenson, 1998; Schultz, Bottorff, & Johnson, 2006; Wewers, Kidd, Armbruster, & Sarna, 2004). However, in a small one-sample study, hospital nurses who attended a two-hour training on the latest clinical practice guidelines were able to somewhat increase their self-efficacy, and how they perceived their smoking cessation behaviors (Barta & Stacy, 2005).

It is essential that all clinicians be provided with comprehensive training for tobacco-cessation counseling. The Cochrane Database of Systematic Reviews (Lancaster, Silagy, & Fowler, 2000) found that trained health professionals were more likely to provide smoking cessation interventions than untrained controls. Smoking cessation training programs increased the number of people health professionals identify as smokers, increased the number of people offered advice and support for quitting, and also had a measurable effect on health professionals' performance (Lancaster et al., 2000).

Because this study tested the effectiveness of a tobacco-cessation training program on nursing student self-efficacy, the findings can make an important contribution to the literature. No other study previously examined the effect of a tobacco-cessation training program on nursing student self-efficacy as well as actual tobacco-cessation counseling behaviors using a randomized control design.

Problem of Study

The problem of this study was to determine if educating student nurses with the *Rx for Change* tobacco-cessation training program delivered via an online Blackboard Learning System increased the students' self-efficacy. The secondary problem was to examine if this tobacco-cessation training program increased the frequency of the student nurses' smoking cessation counseling interventions with their hospitalized patients.

Rationale for the Study

Tobacco-cessation counseling is not only a leading clinical service in terms of its relative public health impact and cost-effectiveness, but it is also a cost-saving measure (Maciosek et al., 2006). Furthermore, tobacco use treatment is more cost-effective than other clinical preventive services, including mammography, colon cancer screening, Pap tests, treatment of mild to moderate hypertension, and treatment of high cholesterol (Maciosek et al.). Smoking cessation counseling receives the highest rating for a cost-effective service based on the burden of disease and the relative ease of intervention (CDC, 2002).

Nurses are effective interventionists when they educate patients in tobacco-cessation (Rice & Stead, 2008). The continued revision, expansion, and improvement in nursing are dependent upon the preparation of highly competent individuals who can function in diverse roles. The role of health educator has been supported for nurses for some time.

Almost twenty years ago, the American Nurses Association (1991) wrote that nursing education faces significant challenges in regard to its relevance and accountability to the public it serves. The mission of nursing education is not only the promotion of quality care by educating qualified clinicians but to the creation of educational projects of its faculty and students to actually provide public health services (Institute of Medicine [IOM], 2003; Pew Health Professions Commission, 1998).

A number of initiatives and organizations have been in the forefront for assisting nurses and nursing students in tobacco-cessation treatment. Tobacco Free Nurses (TFN) is the first national initiative that has focused on helping nurses and nursing students quit smoking, providing tobacco-cessation information and tools to nurses for use in patient care, and enhancing the culture of nurses as leaders and advocates of a smoke-free society (American Nurses Association [ANA], 2009a).

The American Nurses Association (ANA, 2009b) also supports efforts to prevent and reduce tobacco-related disease and mortality. In the ANA's position statement on social causes and health care, the reduction in tobacco use is considered a national public health priority. The American Psychiatric Nursing Association (2008) promotes education through the inclusion of didactic and experiential content in nursing education and continuing nursing education programs.

Because of the changing nature of nursing, the educational system will continue to play a vital role in serving the health needs of the public. Teaching tobacco dependence in clinical practice guidelines can create an opportunity for nursing students to acquire

and practice their skills in collaboration with patients. Nurse educators can proactively facilitate smoking cessation care in any clinical setting with the implementation of tobacco-cessation training in the basic educational nursing curriculum. This study examined whether educating student nurses in tobacco-cessation treatment improved the student nurses' self-efficacy and behavior for smoking cessation counseling with their patients in the hospital setting.

Theoretical Framework

Social Cognitive Theory (SCT) is the theoretical framework that underpins this study. SCT has been widely used in behavioral studies and asserts that behavior is explained by a dynamic interaction of personal factors (cognition, perceptions) and environmental influences (Bandura, 1986). SCT can be applied in an educational perspective: students' performances (behavior) are influenced by how learners themselves are affected (cognition, perceptions) and by the educational strategies (environment). Bandura refers to this interaction as "triadic reciprocity" and is illustrated in the statement "behavior is a product of both self-regulated perceptions and external sources of influence" (p. 454).

One important construct of SCT is self-efficacy, which is defined as "a judgment of one's capability to organize and execute courses of action required to attain designated types of performance" (Bandura, 1986, p.391). Bandura (1986) posits that self-efficacy is a self-regulated cognitive process that affects a person's behavior profoundly. Self-efficacy represents an individual's cognitive self-appraisal of their competence to execute

specific actions or behaviors with confidence (Bandura, 1997). Self-efficacy focuses on one's belief in the ability to perform a desired behavior. Actual ability or the result of the action is secondary to the perceived ability to achieve the behavior (Bandura, 1997).

Perceived self-efficacy can be described as competence-based, prospective, and action-related as opposed to similar constructs that contribute to only part of this portrayal (Bandura, 1997). These traits form perceived self-efficacy as a distinctive theoretical construct different from related ones, such as self-esteem, locus of control, or self-concept of ability (Luszczynska et al., 2005). Self-efficacy furnishes this construct with additional explanatory and predictive power in a variety of research applications. Bandura (1986) asserts that perceived self-efficacy can predict performance. Researchers have conceptualized a general sense of self-efficacy that refers to a global confidence in one's ability across a wide range of situations (Schwarzer & Jerusalem, 1995).

General self-efficacy describes an expansive personal competence to deal competently with a variety of situations and allows for the possibility of explaining a behavior (Schwarzer & Jerusalem, 1995). A person who believes in producing a competent outcome can conduct a more active role in their environment. A strong sense of competence facilitates cognitive processes and performance in a variety of settings, including clinical decision-making and educational achievement.

Social cognitive theory identifies several conditions under which self-efficacy beliefs may vary across distinct domains of functioning (Bandura, 1997). Proficient performance is partly guided by higher-order self-regulatory skills. These include generic

skills for assessing task demands, constructing and evaluating alternative courses of action, setting goals, and creating self-incentives to sustain engagement in activities (Bandura, 1997; Schwarzer & Jerusalem, 1995).

According to Bandura (1986), there are four sources of self-efficacy: enactive attainment; vicarious experience; persuasory information; and physiological states. Bandura emphasized that mastery experience (enactive attainment) is the most influential source of self-efficacy. Successful experiences raise self-efficacy with regard to the target performance while experiences with failure lower self-efficacy. The stronger the perceived self-efficacy, the more sustained are the efforts in a particular behavior (Bandura, 1997).

Other sources of efficacy information also have implications for learning achievement. Vicarious experience is an example of how learning occurs by observation. Observing peers, especially those with perceived similar capabilities performing target performances, results in evaluative information about one's personal capabilities (Bandura, 1997). Verbal persuasion (persuasory information) or convincing serves as another source of efficacy information. The physiological states can influence students as well. Students often have physical reactions to anticipated events.

As applied to this study, the behavior (tobacco-cessation counseling performance) was (can be) influenced by how learners are affected by personal factors (one's self-efficacy) and environmental strategies (the training intervention). Self management

strategies developed in one realm of activity (training) are operative in other activity domains (counseling) with resulting similarity in perceived self-efficacy among them.

Social learning theory is not determined merely by the personal processes of self-efficacy. These processes are assumed to be influenced by the environment and behavioral events in reciprocal fashion. For example, a student's response to a learning experience is assumed to be determined not only by self-perceptions of efficacy, but also by the environmental stimuli of the educational intervention and by the outcome: the actual assessment and smoking counseling behavior. This reciprocal formulation allows self-regulative responses to influence both the environment (the educational intervention) and the personal processes (self-efficacy perceptions).

In summary, the reciprocal nature of the determinants of human behavior in social cognitive theory makes it possible for educational efforts to be directed at personal and environmental factors. Individuals learn by observing, with the environment and the personal factor of self-efficacy as the chief factors influencing behavior. Self-efficacy beliefs function as proximal determinants of performance that operate through cognitive and motivational intervening processes. Social cognitive theory postulates that the enactive attainment source of self-efficacy information is the most influential determinant of performance. Mastery experiences of learning result from performing the behavior.

Assumptions

The assumptions relevant from the theoretical framework of Social Cognitive theory are the following:

1. Learning is an internal process.
2. Learning occurs by observation.
3. Learning results from performing the behavior.
4. Behavior is goal-directed.
5. Behavior can be self-regulated.
6. Self-efficacy can be self-regulated and changed.

Hypotheses

The following research hypotheses were formulated:

1. Nursing students who participate in the three-hour *Rx for Change* tobacco-cessation training program will have an increase in general self-efficacy at two-weeks post training and at eight-weeks post training (the end of their 10-week clinical rotation) compared to nursing students who participate in a three-hour attention control intervention.
2. Nursing students who participate in the three-hour *Rx for Change* tobacco-cessation training program will assess and counsel patients about tobacco-cessation more frequently than nursing students who do not participate in the training program.

Definition of Terms

The following listing includes the major conceptual definitions for this study. An operational definition is given for all measurable variables.

1. Student Nurse: an individual who is a student in an entry-level nursing education program that prepares the person for registered nursing practice. For this study, the student nurse was a second-year associate degree nursing student enrolled at one community college located in the southwestern United States.
2. Self-efficacy: “a judgment of one’s capability to organize and execute courses of action required to attain designated types of performance” (Bandura, 1986, p. 391).
3. General self-efficacy: a broad and stable sense of personal competence to deal efficiently with a variety of situations; a global confidence in one’s ability across a wide range of situations (Schwarzer & Jerusalem, 1995). General self-efficacy was measured using the General Self-Efficacy Scale (GSEs), a 10-item Likert scale that ranges from 1 to 4. A higher mean score indicates a stronger belief in self-efficacy (Schwarzer & Jerusalem, 1995).
4. Tobacco use assessment and tobacco-cessation counseling behaviors: the five key evidence-based clinical practice guideline behaviors based on the U.S. Public Health Service Clinical Practice Guideline for Treating Tobacco Use and Dependence (Fiore et al., 2008). The five key components of tobacco-cessation assessment and counseling are called the 5 A’s [sic]: *ask* the patient about tobacco

use, *advise* the patient to quit, *assess* the patient's readiness for quitting, *assist* the patient in quitting, and *arrange* follow-up for the patient. This researcher developed a tobacco assessment form based on the 5 A's which the participants used prospectively to compile the frequency of their tobacco use assessments and smoking cessation counseling behaviors with patients. The *assist* behavior involved the participants giving their patients written information about quitting and a counseling toll-free telephone number.

5. Educational intervention: the copyrighted *Rx for Change: Clinician-Assisted Tobacco Cessation* training program provides health professional students and/or licensed clinicians with evidence-based guidelines for assisting tobacco users with quitting (University of California, San Francisco, 2004-2008). The teaching strategies are varied and include learning objectives, PowerPoint slides, audience handouts, and role playing case scenarios. The training program is based on principles set forth in the U.S. Public Health Service Clinical Practice Guideline for Treating Tobacco Use and Dependence (Fiore et al., 2008).

Limitations

The limitations of this study were the following:

1. Findings of the study can only be generalized to the study sample which consisted of volunteer participants selected by a nonprobability convenience method from the total population of second-year associate degree nursing

students enrolled at one community college located in the southwestern United States.

2. Because the participants knew each other prior to the start of the study, a pre-conceived bias could have influenced the group dynamics, and in turn, the environment of the study.

Summary

An experimental study of tobacco-cessation training, general self-efficacy and tobacco-cessation counseling behaviors of nursing students was conceptualized within social cognitive theory. The assumptions that were relevant from the theoretical framework were described. The study was justified with relevance to nursing. The major focus of this study examined whether the *Rx for Change* educational intervention had a self-efficacy effect on nursing students. Two hypotheses were derived from the problem statement. The conceptual and operational definitions were given for all the major variables. The limitations that diminish the generalizability of the study were recognized.

CHAPTER II

REVIEW OF LITERATURE

This chapter provides an examination and synthesis of the relevant literature on smoking cessation. The literature review is presented in the following seven sections: health care provider interventions for smoking cessation; barriers to tobacco-cessation interventions; tobacco-cessation training of health care providers; self-efficacy; inpatient smoking cessation treatment; evaluation of the *Rx for Change* tobacco-cessation training program; and tobacco-cessation training, nurses' self-efficacy, and tobacco-cessation counseling.

A computerized literature search was conducted to find studies of smoking cessation and nurses from January 1990 to July 2009. The main databases used were CINAHL, ProQuest Nursing and Allied Health Source, PsycINFO, MEDLINE, and the Cochrane Library. The key terms used in the search strategy, which varied slightly depending on the database, were tobacco, smoking, tobacco-cessation, and smoking cessation in combination with training, education, *Rx for Change*, counseling, self-efficacy, nurses, nursing students and randomized controlled trials. Systematic reviews, meta-analysis, Dissertation Abstracts, and ProQuest Digital Dissertations were also examined. Additionally, manual and ancestry searches of specialist journals, conference abstracts, and reference lists of previous relevant articles were completed.

Health Care Provider Interventions for Smoking Cessation

There is substantial evidence that the advice and support given to smokers by health care providers can achieve abstinence rates. There are two factors that have been shown to reduce cigarette smoking: 79% to 90% of smokers want to quit smoking and 70% of smokers visit a health care provider each year (Cherry, Burt, & Woodwell, 2003).

A number of meta-analyses have been conducted that revealed that both physicians and nurses have been effective smoking cessation counselors because patients are 1.5 to 2 times more likely to quit when counseled than those patients who receive usual care (Fiore et al., 2008; Lancaster & Stead, 2004; Rice & Stead, 2008). However, compared to physician advice alone, nurse assisted smoking cessation counseling nearly doubled quit rates in an outpatient setting (Hollis, Lichtenstein, Vogt, Stevens, & Biglan, 1993).

Although there is a fair volume of research focusing on smoking cessation and the effectiveness of only nursing interventions, the Cochrane library (Rice & Stead, 2004; Rice & Stead, 2008) was the best source for randomized clinical trials. The Cochrane reviews (Rice & Stead, 2004; Rice & Stead, 2008) focused on the nurse as the intervention rather than on a particular type of counseling cessation treatment. The interventions were not standardized and were not all based on the clinical practice guidelines from the U.S. Department of Health and Human Services. Nursing intervention for smoking cessation was defined as providing advice, counseling, and/or strategies to assist patients to quit smoking. There were studies that compared usual care

with a nursing smoking cessation intervention or brief advice to an intensive nursing smoking cessation intervention. Also, interventions were grouped into low or high intensity for comparison. Low intensity interventions were defined as advice during a single consultation lasting 10 minutes or less with either one follow-up visit or none. The high intensity interventions lasted more than 10 minutes, the patients were given written materials, and there was more than one follow-up visit. Most of the studies used a convenience sample of patients rather than a random sampling strategy. None of the trials have been replicated to strengthen the findings.

In the earlier meta-analysis of the Cochrane Corporation (Rice & Stead, 2004), the studies were conducted from 1983 to June 2003. Twenty-nine studies met the inclusion criteria for a randomized study. The researchers found that in twenty randomized clinical trials, nursing interventions significantly increased the odds (odds ratio 1.47, 95% confidence interval [CI], 1.29 to 1.68) of patients quitting smoking compared to a control or to usual care. The authors also found that advice and support from nurses could increase successful smoking cessation, especially in a hospital setting. The researchers found similar effects for high and low intensity smoking cessation interventions by nurses.

In the more recent Cochrane Collaboration review (Rice & Stead, 2008), the studies were conducted from 1987 to 2007. There were only two studies in the 1980s. Forty-two studies met their inclusion criteria for a randomized clinical trial. The authors noted that in 31 studies, nursing smoking cessation interventions significantly increased

the rate of smokers quitting (relative risk [RR] = 1.28) versus a control group or usual care. The reviewers found no evidence that higher intensity interventions had larger treatment effects; in fact, there was evidence that lower intensity interventions were also effective (RR = 1.27). Nursing-led interventions also increased the chances of successful smoking cessation rates in both hospital and non-hospital settings by 50%.

A very recent randomized intervention trial (Smith & Burgess, 2009) of smoking cessation interventions initiated by nurses in a hospital setting confirmed a 12-month tobacco abstinence rate of 62% among patients in the intensive group and 46% among those in the minimal group (odds ratio 2.0).

From a methodological perspective, the quality of tobacco-cessation research has fluctuated over time, making it difficult to compare the results of one study to the next. Despite these caveats, tobacco-cessation remains a key topic in nursing research. More experimental studies that examine the effects of brief advice by nursing are needed, as this type of cessation counseling may more accurately reflect the current evidenced based practice. Systematized interventions should be examined so that more rigorous comparisons can be made between studies. However, the majority of nurses are not providing smoking cessation advice and support.

In the Fiore et al. (2008) meta-analysis, the researchers found that only 25% to 30% of nurses provide smoking cessation interventions to their patients. This is also confirmed in a recent tobacco dependence survey (American Psychiatric Nurses Association, 2008) of 1,288 members of the American Psychiatric Nurses Association.

Only 30% of the participants provided evidence-based practice guidelines in tobacco dependence treatment, and another 33% rated tobacco dependence as a low priority in their clinical practice. In addition, only 12.3% of the mental health nurses rated their ability to counsel clients in smoking cessation as high. They also reported that 70% of their colleagues do not provide tobacco dependence treatment. Moreover, only 75% of the responding nurses believe that their nursing organization should support nursing tobacco-cessation interventions.

While the research design of the above mental health nursing survey limits the strength of the findings, mental health nurses are often considered leaders in substance abuse counseling. Their apparent ineffective clinical practice in the area of tobacco-cessation treatment is alarming. If 100,000 clinicians were to help 10% of their patients who smoke to stop each year, the number of smokers in the United States would drop by an additional 2 million people annually (Fiore et al., 2008).

The Fiore et al. (2008) review demonstrates the differences in nurses' practice behaviors in smoking cessation counseling. In order to explain the factors that may limit tobacco-cessation interventions in nursing, the identification of the subsequently mentioned barriers is a notable consideration.

Barriers to Tobacco-Cessation Interventions

Barriers to smoking cessation interventions have been cited in multiple surveys of nurses and include limited knowledge or training, insufficient skills, lack of confidence, lack of patient motivation, perceived ineffective advice, and limited time in the patient

encounter (Griebel, Wewers, & Baker, 1998; Johnson, Budz, Mackay, & Miller, 1999; Sarna, Brown, Lillington, Wewers, & Brecht, 2000; Wewers, Ahijevych, & Sarna, 1998; Wewers et al., 2004; Williams, Spence-Laschinger, & Weston, 1999). In a later article, the authors (Sarna & Bialous, 2006) found that the barriers to nurses providing smoking cessation interventions not only included their limited knowledge and skills, but found additional obstacles that included limited nursing research regarding tobacco use, a lack of professional leadership, and the nurses' own smoking status. These perceptions have predicted smoking cessation counseling behaviors of nurses over several years. It is essential for nurses to overcome their limited knowledge and/or training so that they can provide effective tobacco-cessation counseling.

Lack of Self-efficacy

Health care providers' lack of self-efficacy has been cited as a barrier in successful counseling and patient health behavior change. In one cross-sectional study, home health care nurses' self-efficacy was associated with increased tobacco counseling (Borrelli, Lee, & Novak, 2008). The researchers found that for every one-point increase in self-efficacy, there was a 30% increase in the odds that nurses would counsel their patients who smoked. Among the study nurses, perceived importance of counseling was also associated with three of the 5 A's, asking about smoking status, advising patients to quit, and assisting patients with quitting (Borrelli et al.).

Researchers observed another barrier to nurses' counseling behaviors in a study of 1,500 oncology nurses; in this study, nurses' perceived their advice as ineffective due to

their patients' lack of motivation (Sarna et al., 2000). In contrast, nurses who were confident that their tobacco-cessation counseling would be effective at assisting their patients to quit were significantly more likely to recommend the use of nicotine replacement, and spent more time counseling patients (Borrelli et al., 2001). However, the above studies are limited by their cross-sectional designs and the absence of outcome expectations that consider self-efficacy.

In a study of pediatricians (Cabana et al., 2004), the investigators found that physician self-efficacy was more important in predicting their tobacco-cessation counseling behaviors than barriers such as time limitations, inadequate training, and provider characteristics that have been shown to predict and limit nurses in tobacco counseling. Nurses cite limited knowledge and skills in tobacco-cessation counseling as the primary barrier to intervening with patients.

Lack of Education

A lack of formal and continuing nursing education about tobacco dependence and treatment was reported as a barrier in a survey of 48 graduate psychiatric/mental health nursing education programs; one-third of the programs included no content on the physiology of tobacco dependence or tobacco intervention training (Price, Jordan, Jeffrey, Stanley, & Price, 2008). Considering that mental health nurses are substance abuse counselors, the lack of tobacco use content in graduate school curriculum is alarming. Researchers and educators have been calling for competencies in tobacco-cessation counseling to be included in normal patient care and integrated into curricula in

other master degree programs, for example in acute care nurse practitioner programs (Heath et al., 2002).

A lack of education has also been cited as a barrier in medical and dental education. In recent surveys (Brown, Pfeifer, Gjerde, Seibert, & Haq, 2004; Spangler et al., 2002; Weintraub, Saitz, & Samet, 2003), medical schools do report that health effects of tobacco use are included in didactic course material. However, a limited number of educators incorporate the health effects of tobacco into the clinical setting by teaching and assessing tobacco intervention competencies. Even though tobacco-cessation and prevention education in dental and dental hygiene schools have increased in recent years, the training still lacks integration throughout the curriculum and the assessment of students' clinical competency (Weaver, Whittaker, Broom, & Valachovic, 2002). The dilemma is evident in education. All health care providers could have the opportunity to provide tobacco-cessation interventions, but often lack the necessary knowledge, training, and experience.

Smoking Status

There have been numerous investigations on the smoking status of nurses, yet only a few recent studies have been conducted on the medical profession. Most of the studies on physician smoking status were conducted in the 1990s.

Fifteen percent of registered nurses, or approximately 388,960 of the 2.6 million professional nurses, in the U.S. smoke (CDC, 2004). Although smoking among registered nurses is declining, it is still higher than the Healthy People 2010 goal of 12% (CDC;

USDHHS, 2000b). Nursing students have a prevalence rate of smoking from six percent (Jenkins & Ahijevych, 2003) to 14% (Patkar, Hill, Batra, Vergare, & Leone, 2003) to 24% (Gorin, 2001). A national health survey found that the national smoking rate for physicians had fallen dramatically between 1987 and 1994, and was below 10% by the mid 1990s (Lee, LeBlanc, Fleming, Gomez-Marin, & Pitman, 2004). A more recent review (Smith & Leggat, 2007) cited that only five percent of physicians smoke.

Belief in the effectiveness of advising and assisting in smoking cessation has been found to be weakest among nurses who smoke. In numerous descriptive studies using one-sample surveys or qualitative methods, investigators found that nurses who smoke are less willing to practice smoking cessation counseling compared with non-smoking nurses. In a qualitative study (Heath, Andrews, Kelley, & Sorrell, 2004), the researchers explored how tobacco-dependent nurse practitioners described their own experience of tobacco dependence and how that experience affects the delivery of smoking-cessation interventions with patients. All of the 12 nurse practitioners who participated in the interviews described limited smoking-cessation interventions with their patients.

Pelkonen and Kankkunen (2001) found that even though nurses who smoked had more skills and knowledge related to smoking cessation, they were less likely to discourage their patients from smoking. In a survey of 1,074 nurses (Slater, McElwee, Fleming, & McKenna, 2006), 26% of the sample were smokers and were also less motivated to provide cessation support for patients; they had less positive attitudes about the value of smoking cessation, were less likely to have received smoking cessation

training themselves, and were less likely to want further training. Additionally, the nurses who smoked rated their ability to help patients and their effectiveness as a role model lower than nurses who were ex-smokers or non-smokers. In another survey describing the barriers to smoking interventions by nurses (Svavarsdottir & Hallgrimsdottir, 2007), Icelandic nurses who smoked were less likely to advise against smoking ($p < 0.05$) compared to nurses who never smoked. In all of the above studies, the smoking status of nurses was associated with how these nurses perceived their counseling cessation skills. The actual counseling behavior of the nurses was not tested. The implications for practice are evident because tobacco-dependent nurses do not view that they can adequately intervene with patients who use tobacco. Effective strategies are needed to assist and support not only tobacco-dependent patients but nurses as well.

An international review of physicians was conducted to determine if their smoking status was associated with tobacco-cessation counseling (Smith & Leggat, 2007). Although there were no correlations between smoking status and counseling behaviors in many of the countries of origin for the physicians, the authors concluded that physicians who did not smoke counseled their patients significantly more often than the physicians who smoked.

Other Barriers

In a recent survey of 868 nurses, researchers (Svavarsdottir & Hallgrimsdottir, 2007) found several barriers to smoking interventions by nurses. Failure to ask and advise clients about the importance of smoking cessation and assisting with smoking cessation

correlated ($p < 0.001$) with several factors, including lack of time, insufficient knowledge or training, and that smoking cessation counseling was not part of a nurse's role.

Tobacco-Cessation Training of Health Care Providers

Throughout the scientific literature, researchers highlight the importance of tobacco-cessation training for nurses, physicians, dentists, dental assistants/hygienists, and pharmacists. Health care providers who believe they are prepared are more apt to assume tobacco interventionist roles.

It is essential that nurses be provided with comprehensive training for tobacco-cessation counseling. However, numerous studies document a general lack of tobacco-cessation training among nurses (Heath & Andrews, 2006; Heath et al., 2002; Hornberger & Edwards, 2004; Kraatz et al., 1998; Wewers et al., 2004). Undergraduate programs are deficient in the number of hours and content offered on nicotine dependence and addiction (Naegle, 2002). Similarly, nurse practitioner programs in primary care lack the inclusion of didactic and experiential content for the care of persons with substance use disorders, including nicotine dependence (Vasquez & O'Neal, 2002). Also, there is a lack of tobacco-related curricular content in acute care nurse practitioner programs (Heath et al., 2002).

Tobacco use related content in nursing schools needs improvement. In a recent study examining tobacco dependence curricula in U.S. baccalaureate and graduate nursing programs, the investigators found that less than 50% of undergraduate nursing programs provide tobacco information and clinical practice, and less than 50% of

undergraduate and graduate nursing programs use the Public Health Service guideline as a teaching tool (Wewers et al., 2004). However, approximately two-thirds of the graduate programs surveyed did include information regarding smoking cessation techniques in the required curriculum.

In a study about tobacco curricula and interventionist roles, researchers (Fried, Reid, & DeVore, 2004) examined the perceptions of six groups of students in health professions from one urban academic health center. The majority of the 319 students agreed that their programs had course content describing their role in helping patients quit tobacco use, although their perceptions varied widely by program: 100% of dental hygiene and pharmacy students agreed that their curriculum offered tobacco-cessation course content, while 86.3% of medical students, 84.6% of dentistry students, 58.9% of nursing students and 14.6% of physical therapy students ($p < 0.001$) felt the same. When asked if their program adequately prepared them to help smokers quit, agreement ranged from 94.7% of dental hygiene students, 83.9% of pharmacy students, 53.8% of medical students, 39.6% of dentistry students, 32.1% of nursing students, to only 5.5% of physical therapy students ($p < 0.001$). The above findings could be an incentive to nurse educators. If nursing curriculums incorporate the necessary knowledge, training, and experience in tobacco-cessation activities, nursing students would be better prepared to offer potentially life-altering interventions to their patients.

In the meta-analysis of tobacco research, Fiore et al. (2008) concluded that clinicians in practice are more likely to engage in smoking-cessation counseling

behaviors that they learned during their formal education than behaviors learned in less formal settings. Incorporating tobacco-intervention curriculum content into formal professional education is the most successful way to ensure clinician performance of tobacco-intervention behaviors (Fiore et al.).

The Cochrane Database of Systematic Reviews (Lancaster et al., 2000) found that trained health care providers were more likely to provide smoking-cessation interventions than untrained controls. Tobacco-cessation training programs increased the number of people health care providers identified as smokers and increased the number of people that were offered advice and support for quitting; it also had a measurable effect on health care providers' performance (Lancaster et al.). Clearly, these findings could be the impetus for nurse educators to provide evidence-based practice education to nursing students.

Self-efficacy

Self-efficacy and Tobacco Counseling

Lack of physicians' perceived sense of self-efficacy has been linked to their failure to offer effective tobacco-cessation interventions in a number of studies (Anderson et al., 2002; Batra et al., 2002; Fiore et al., 2008). Because perceived self-efficacy is the belief in one's competence to tackle difficult or novel tasks, the roles of education and practice to increase self-efficacy are evident. Two studies established this premise: when medical and pharmacy students receive both didactic instruction and the opportunity to practice their skills, they consistently demonstrate an increase in

knowledge and they gain confidence in providing tobacco-cessation interventions (Brown et al., 2004; Hudmon et al., 2003). The educational environment translates skills and behavioral mastery to intervening with the patient.

Self-efficacy of Nursing Students

The very nature of nursing requires knowledgeable and skillful clinicians. Self-efficacy theory dictates that nurses need a perception of high self-efficacy in order to utilize the appropriate knowledge and skills in caring for their patients. There is an absence of published studies in the literature investigating the effect of tobacco-cessation education on the self-efficacy of nursing students.

In the last decade, the majority of studies on self-efficacy and nurses have been either descriptive surveys or quasi-experimental designs. Nurse educators have studied self-efficacy due to the construct's association with motivation, goal-setting, and achievement. Self-efficacy has been studied in health teaching of baccalaureate nursing students (Goldenberg, Andrusyszyn, & Iwasiw, 2005), undergraduate nursing and medical students (Laschinger & Tresolini, 1999), and baccalaureate nursing students and preceptors after a preceptorship experience (Goldenberg, Iwasiw, & MacMaster, 1997). Numerous researchers tested the effectiveness of college courses and clinical experience in improving nursing students' self-efficacy and in their counseling ability on health promotion areas that included smoking, exercise, nutrition, sexually transmitted diseases, and injuries (Clark, Owen, & Tholcken, 2004; Ford-Gilboe, Laschinger, Laforet-Fliesser, Ward-Griffin, & Foran, 1997; Laschinger, McWilliam, & Weston, 1999; Laschinger &

Tresolini, 1999). There were a number of studies that revealed increased nursing students' self-efficacy after the use of computerized educational methods (Babenko-Mould, Andrusyszyn, & Goldenberg, 2004; Madorin & Iwasiw, 1999; McConville & Lane, 2006).

The self-efficacy of senior baccalaureate nursing students increased following a 12-week preceptorship in the Goldenberg et al. 1997 study. In a later Goldenberg et al. (2005) study, health teaching-related self-efficacy was evaluated two weeks after two half-day workshops on simulated health teaching. With a 33% return rate, the authors found that the 22 students' overall self-efficacy scores increased significantly ($p = 0.001$). However, using a randomized experimental design in a larger sample, and testing self-efficacy at base and at end time points, might have given more credence to the findings. Educating nurses in the assessment and counseling of patients and creating opportunities for them to practice their skills can increase their self-efficacy in all areas of health promotion behaviors (Laschinger, McWilliam, & Weston, 1999).

Inpatient Smoking Cessation Treatment

The Joint Commission on Accreditation of Healthcare Organizations (Joint Commission, 2005), in coordination with the Centers for Medicare and Medicaid Services, have listed tobacco-cessation counseling as a hospital-wide quality performance measure. Smoking-cessation programs must be instituted to meet health promotion and education goals developed on admission for all patients.

Strong support for implementing cessation interventions in hospitals exists within the tobacco literature (Dornelas, Sampson, Gray, Waters, & Thompson, 2000; Fiore et al., 2008). The researchers who helped to develop the Public Health Service Clinical Practice Guideline on Tobacco Use and Dependence (Fiore et al.) recognized the distinctive role health care providers play in promoting smoking-cessation efforts. The Guideline recommends that in every hospital or clinic patient visit, HCPs perform the 5A's: ask about smoking status; advise smokers to quit; assess readiness to quit; assist in quitting; and arrange follow-up. Recommendations have been made to classify tobacco use and assessment as the fifth vital sign (Fiore et al.). Unfortunately, the hospital sector has been one of the last health care delivery settings to incorporate tobacco use assessment and counseling (Rigotti et al., 2007). Over six million smokers are hospitalized every year making hospitalization an excellent opportunity for smoking-cessation interventions. Smokers are more receptive for help because of either a smoking-related illness and/or because the hospital environment prohibits smoking (Rice & Stead, 2008; Rigotti et al.). An extensive systematic review found that smoking cessation programs are effective in all hospitalized smokers regardless of admitting diagnosis (Rigotti et al.). As the largest group of health care professionals, having more contact with patients than any other provider, hospital nurses are in a unique position to help their patients who use tobacco. Nurse-provided counseling in hospitals has the potential to capitalize on the opportunity presented by the patients' hospital stay. A Cochrane review (Rice & Stead, 2008) concluded there was reasonable evidence showing that nurse-led

smoking cessation interventions in hospitals are effective. Nurse educators can facilitate smoking-cessation care in the hospital by learning tobacco-cessation training in their basic nursing school curriculum.

According to Sarna et al. (2000), 68% of smokers stated that they wanted to stop smoking, yet only 24% were offered advice by nurses in the hospital on smoking cessation. In another survey, the researchers found that only 7% of hospital nurses counsel known smokers to quit (McCarty, Hennrikus, Lando, & Vessy, 2001).

Many chronically ill patients could have been spared hospitalizations, treatments, and suffering if they had been advised and counseled to quit smoking (Rigotti et al., 2007). In the latest research, only 25% of nurses provide smoking cessation interventions in the hospital (Fiore et al., 2008). The Healthy People 2010 goal is that 75% of clinicians would provide smoking cessation counseling (USDHHS, 2000b).

Evaluation of the *Rx for Change* Tobacco-Cessation Training Program

The researchers who helped develop the Public Health Service Clinical Practice Guideline on Tobacco Use and Dependence (Fiore et al., 2008) recognized that training health care providers promotes smoking-cessation interventions. The *Rx for Change* Tobacco-Cessation Training Program uses the 5A's guideline recommended in the Public Health Service Clinical Practice Guideline on Tobacco Use and Dependence. The *Rx for Change* training program was originally developed for pharmacy students.

In a study of pharmacy students (Hudmon et al., 2003), the researchers evaluated the implementation of the *Rx for Change* program in the curriculum of all California

pharmacy schools. The results indicated that the tobacco-cessation training program had a positive impact on pharmacy students' self-reported abilities to provide tobacco-cessation counseling. Furthermore, the data suggest that the *Rx for Change* program provides students with the knowledge and skills to be effective tobacco-cessation counselors.

Another set of researchers (Corelli et al., 2005) evaluated the *Rx for Change* program among pharmacy students. Students received seven to eight hours of tobacco-cessation training and pre- and post-training surveys on their perceived confidence and counseling abilities, and the projected number and quality of tobacco-cessation interventions they expected to implement. The results of this study indicated that post-training, the students' perceived confidence and ability to provide cessation counseling improved significantly. Ninety-four percent of students reported their counseling abilities as good, very good, or excellent following training, compared with 22% prior to training. The majority of students (87%) indicated that the number of patients they expected to counsel on tobacco-cessation will increase, and 97% reported that the quality of cessation counseling would also increase due to the training.

A two-day train-the-trainer program developed from the *Rx for Change* Clinician-Assisted Tobacco-Cessation program was evaluated among faculty members of acute care nurse practitioner programs (Heath et al., 2007). Thirty faculty members were administered surveys at baseline and 12 months after training. The percentage of tobacco education increased from 22.2% to 74.1% ($p < 0.001$), perceived effectiveness in teaching tobacco-cessation increased ($p < 0.001$), and the perceived value of using an

evidence-based national guideline also increased ($p < 0.001$). These findings support the *Rx for Change* program as an effective education method for training pharmacy students and nursing faculty.

Tobacco-Cessation Training, Nurses' Self-efficacy, and Tobacco-Cessation Counseling

Studies evaluating the effectiveness of tobacco-cessation training on nurses' self-efficacy and tobacco-cessation counseling behaviors have used designs that are not optimal for establishing effectiveness. A literature review did not reveal experimental studies that addressed the effects of a tobacco-cessation training program on nurses' self-efficacy and cessation-counseling behaviors. However, there was one quasi-experimental study that evaluated the self-efficacy of 15 hospital nurses attending a two-hour smoking-cessation training program based on the clinical practice guideline of the 5 A's (Barta & Stacy, 2005). The instrument used in the study was the author-developed survey on self-efficacy with content validation only. Using a Likert scale, the nurses self-reported their confidence and behavior on the 5A's behaviors. The survey was administered immediately prior to and directly following the training program, and also six-weeks post-training. The variables "advise to quit," "assess readiness," "provide literature," and "recommend medication" demonstrated significant differences in mean scores. The final results suggested that the tobacco-cessation training session was somewhat effective in increasing self-efficacy and in the nurses' perceptions of how frequently they engaged in brief smoking-cessation interventions. Only 11 nurses had the opportunity to counsel between one and five patients.

In a more recent study (Borrelli et al., 2008), researchers prospectively evaluated whether training 98 home health nurses with the 5A's program was associated with changes in attitudes towards smoking-cessation counseling and counseling behaviors. Compared with pre-training data, nurses at six months post-training reported significantly higher levels of self-efficacy to counsel patients with positive outcome expectations and optimism that patients would follow their advice; in addition, they indicated a perceived worth of smoking counseling, perceived importance of quitting smoking, and perceived organizational support. Nurses were also significantly more likely to ask about smoking status, assess readiness to quit, advise to quit, assist with quitting, arrange follow-up, spent more time counseling smokers, and were less likely to selectively counsel (Borrelli et al.).

Using an online, semester-long tobacco-cessation course adapted from the *Rx for Change* Clinician Assisted Tobacco-Cessation program, researchers evaluated pharmacy and nursing students pre- and post-course with surveys on self-efficacy and perceptions of their counseling skills and ability to counsel patients on tobacco use (Zillich, Hudmon, & McDaniel, 2007). Twenty-five students successfully completed the course. There was a significant improvement in students' skills and self-efficacy to provide tobacco-cessation counseling. Mean item scores were 2.4 before and 4.1 after the course ($p < 0.001$) for skills and 2.3 before and 4.1 after the course ($p < 0.001$) for self-efficacy.

In a nursing dissertation study, (Hyndman, 2005) the researcher used a quasi-experimental pre-test, post-test design to examine the effect of a dissemination

educational intervention on 138 hospital-based nurses' adherence to clinical practice guidelines (CPGs) on tobacco-cessation and their perceived self-efficacy in treating tobacco use. The dissemination intervention consisted of academic detailing visits, self-study print materials, a video, and a smoking-cessation interventions record form. During a 10-week period, the intervention group demonstrated significantly improved self-efficacy scores compared to the control group. Multiple regression revealed three significant predictors of the nurses' adherence to the CPGs: receiving the intervention ($p < 0.001$); baseline perceptions about using CPGs ($p = 0.05$); and resource adequacy ($p = 0.04$). There were three significant predictors of self-efficacy: receiving the intervention ($p < 0.001$); working full-time ($p = 0.01$); and their value of research ($p = 0.05$).

Although all of these four studies, (Barta & Stacy, 2005; Borrelli et al., 2008; Hyndman, 2005; Zillich et al., 2007) had design limitations, receiving an educational intervention was clearly the strongest predictor of self-efficacy beliefs in tobacco-cessation counseling.

Summary

This review of literature reflects the diversity, as well as the lack, of research on tobacco-cessation training, self-efficacy, and tobacco-cessation counseling behaviors. Self-efficacy as a construct was originally formulated to predict behavior. Several problems with many of the reviewed studies reveal the shortage of experimental designs and the lack of replication studies to strengthen the findings.

Research endeavors were evident across many health care disciplines, although studies related precisely to evaluating tobacco education of nurses to self-efficacy and tobacco-cessation counseling behaviors were scarce. In spite of the literature limitations, there is a growing body of nursing research detailing tobacco-cessation education and nurses' smoking-cessation counseling behaviors. Experimental designs are needed to understand the effectiveness of education in treating tobacco use and dependence in nursing practice. This dissertation study can add to the body of research and can contribute to an increased understanding of the essential educational components of tobacco use and dependence to increase self-efficacy and smoking cessation counseling behaviors of student nurses and licensed nurses alike.

CHAPTER III

PROCEDURE FOR COLLECTION AND TREATMENT OF DATA

A randomized experimental two-group repeated measures design was employed in this study. The two study conditions consisted of the experimental group receiving the three-hour educational intervention *Rx for Change* tobacco-cessation training and the attention control group receiving a three-hour educational intervention with PowerPoint slides on the topics Methicillin-resistant *Staphylococcus aureus* (MRSA), Meningitis and Encephalitis, and Pressure Ulcers. Both educational interventions were delivered using an online Blackboard platform. The independent variable was the tobacco-cessation training versus the attention control group training. The dependent variable was self-efficacy. General self-efficacy was measured by the Generalized Self-Efficacy Scale (GSEs) at two-weeks post-enrollment and at 10-weeks, which was the end of the clinical semester. The secondary outcome measures were process variables, which included frequency of performance of tobacco use assessment and smoking cessation counseling tasks (the 5 A's). These measures included the number of patients who were "asked" if they were tobacco users, the number of smokers who were "advised" to quit, the number of smokers who were "assessed" for their readiness to quit, the number of smokers who were "assisted" in quitting (given written materials and a quit-line phone number), and the

number of smokers who were encouraged or “arranged” for follow-up for smoking-cessation assistance.

Setting

The setting of the study was at one associate degree nursing program in a community college located in the southwestern United States. Classrooms at the college were used to collect the participants’ consent forms and administer/collect the initial and post-study surveys. The students’ Blackboard Learning System was used to deliver the educational interventions to the experimental group and to the attention control group. The nursing students’ assigned hospital units were the locations for the tobacco assessments.

Population and Sample

The sample was selected by a nonprobability convenience sampling method without random selection and consisted of 138 second-year associate degree nursing students enrolled at one community college located in the southwestern United States and registered for Fall 2009 clinical courses. From the available population of 138 students, 136 participants volunteered. Group membership was designated after the participants signed the informed consent. A table of random numbers was used to assign each consenting participant to the experimental group or the attention control group. Six participants dropped from the 10-week study, two at the third week and four at the fifth

week. The final study sample consisted of 130 student nurses with 65 participants in each of the two groups.

Recruitment and Retention

After receiving the approval letters from the Provost of the community college and the Texas Woman's University Internal Review Board (IRB), the recruitment meeting for volunteer participants was conducted at the beginning of the Fall 2009 semester. An informed consent form was read to the volunteers. The purpose of the study, protocol, and time commitment was explained to the participants as well as the students' rights and benefits for participation. After signed informed consent, each participant was randomly assigned to either the intervention or the attention control group by using a table of random numbers. Retention strategies included phone calls and emails to course coordinator.

Sample Size and Method of Determination

Survey studies and quasi-experimental studies on providers' self-efficacy on different types of health promotion areas are available. However, a search of the literature did not reveal randomized experimental designs that studied the effects of provider education on self-efficacy and on health care provider behaviors. The researchers that used educational interventions did not compare intervention groups with control groups, but rather used a single group's baseline scores and compared these with post intervention scores. As a result, less is known about whether educational interventions

produce relative improvements in provider self-efficacy and in provider counseling behavior. A meta-analysis of computerized databases for English language articles during 1987-2008 were systematically evaluated for evidence specifying educational interventions and their associations with improvements in health care providers' adherence to practice guidelines (Weingarten et al., 2002). The main outcome measures were pooled effect sizes calculated with a random effects model. Provider education, feedback, and reminders were associated with significant improvements in provider adherence to guidelines (effect sizes [95% CI, 0.44 (0.19 to 0.68), 0.61 (0.28 to 0.93), and 0.52 (0.35 to 0.69] respectively).

Based on the above analysis, an effect size of .50 was used for the proposed study. A minimum sample of 120 participants, 60 in the intervention group and 60 in the attention control group, was sought assuming a moderate effect (.50) of the intervention on self-efficacy and a two-tailed alpha of .05 to achieve a power of .80. The study achieved greater than the sample estimate with a final total sample of 130 participants with 65 in the intervention group and 65 in the attention control group.

Protection of Human Subjects

In compliance with the current rules and regulations of the Institutional Review Board at Texas Woman's University approval for the utilization and protection of human subjects was obtained. This included permission from the IRB at Texas Woman's University to conduct the study, agency permission from the associate degree nursing

program, and signed informed consents from all volunteer participants in the study. The respondents did not receive any compensation for participating in the study.

Instruments

In this study, the investigator utilized three instruments for measuring the variables of interest. The instruments included a Demographic Data form, the Generalized Self-Efficacy Scale (GSEs), and a Tobacco Assessment form.

Instrumentation

A Demographic Data form developed by this researcher was used to collect the following: age, gender, race/ethnicity, marital status, current license and/or degree, current work status and hours worked, and when relevant, prior education in tobacco-cessation counseling, and smoking status (Appendix A).

The Generalized Self-Efficacy Scale (GSEs) was used to measure general self-efficacy and was completed twice by the final 130 participants (Appendix B). The first GSEs was administered to the sample in person in a classroom setting at two-weeks post-intervention. The second GSEs was sent to the students' Blackboard Learning System at 8-weeks post-intervention, which was the 10th week and end of the students' clinical semester.

The GSEs is a 10-item scale designed to measure general self-efficacy, the belief that one's actions are responsible for successful outcomes (Schwarzer & Jerusalem, 1995). The GSEs has a Likert selection for each question ranging from 1 to 4 (1, *not at all true*; 2, *barely true*; 3, *moderately true*; 4, *exactly true*). The respective responses to

the 10-items were totaled to create a sum score; the possible range is from 10 to 40 points. The higher scores indicate stronger belief in self-efficacy. The level of measurement is interval. Studies have shown that the GSEs has high reliability, stability, and construct validity (Leganger, Kraft, & Roysamb, 2000). Cronbach alpha ranges from 0.75 to 0.94 across a number of different samples (Luszczynska et al., 2005). Cronbach's alpha reliability statistics were run for this dissertation study's sample and were 0.84 to 0.86 for the first and second GSEs distributed respectively. Relationships between the GSEs and other social cognitive variables (intention, implementation of intentions, outcome expectations, and self-regulation) are high and confirm the validity of the scale (Luszczynska et al.). The GSEs is available to researchers without cost and is available in the user's portfolio (Schwarzer & Jerusalem).

This researcher developed a one-page Tobacco Assessment Form based on the Clinical Practice Guideline on Tobacco Use and Dependence, and the 5 A's (Fiore et al., 2008) (*ask* about smoking status, *advise* smokers to quit, *assess* readiness to quit, *assist* in quitting (by providing to the patients written smoking cessation information and toll-free help phone numbers), and *arrange* follow-up [Appendix C]). Instructions for the Tobacco Assessment Form were given to the participants prior to distribution of the forms. The students were asked to document prospectively the assessment and counseling of tobacco use for their hospital patients during their 10-week clinical rotation. The students submitted the completed forms at the end of the clinical semester. The Tobacco

Assessment Form was scored by counting the frequencies of each box checked by the participants for the five counseling behaviors they performed.

Intervention

The intervention for the experimental group employed the *Rx for Change* training program, which is designed for the purposes of health professionals and students to intervene with tobacco users, including patients who are not yet considering quitting (Hudmon et al., 2003). The training program advocates principles set forth in the Clinical Practice Guideline for Treating Tobacco Use and Dependence and the five key steps that are collectively known as the 5 A's (Fiore et al., 2008). The *Rx for Change* is a copyrighted tobacco-cessation training program with access to downloadable files (University of California-San Francisco, 2004-2008). The website is a service at no cost to those who agree to their license. The curricular materials for the educational intervention included the *Rx for Change* core modules: Introduction and Epidemiology of Tobacco Use, Nicotine Pharmacology and Principles of Addiction, Drug Interactions with Smoking, Assisting Patients with Quitting, and a role-playing component with case studies. An additional three handouts were included: the Clinical Practice Guideline for Treating Tobacco Use and Dependence: 2008 Update; Tobacco Cessation Counseling Guidesheet, the 5 A's; and Guide for Clinicians to Help Smokers Quit. Three-hours of training were provided. The training was utilized by sending the modules to the intervention groups' Blackboard Learning System. The intervention included instructions

for the intervention group on how to access the modules and participate in the case studies.

The attention control group received a three-hour educational program also via the students' Blackboard Learning System. The training included PowerPoint slides on nursing topics unrelated to tobacco use and cessation. The topics included MRSA, Meningitis and Encephalitis, and Pressure Ulcers. These PowerPoint slides were offered as a free download on the Nursing 2009 webpage (Nursing, 2009).

Both the intervention group and the attention control group were instructed to complete their reading of the educational interventions within two weeks. Each participant posted a message ("I completed the reading") on the Blackboard Student Learning site when they completed their assignment.

Pilot Study

In the Fall of 2008, a two-group randomized experimental pilot study with repeated measures was conducted in order to examine the self-efficacy effect of a 6-hour internet education program on nurse practitioner students' self-efficacy. The sample of 6 students was drawn from one nurse practitioner program located in the southwestern United States. The sample was randomly assigned to treatment and control groups. The treatment group received the internet education program *Rx for Change*. The control group did not receive the interventional assignment. The General Self-efficacy instrument was completed at two-weeks and at four-weeks post-intervention. The participants also used the Tobacco Assessment Form to assess and counsel their clinic patients on tobacco

use. Due to the final sample size of four, only descriptive statistics were used. The pilot study served to test logistics and gather information prior to the dissertation study in order to improve the latter's quality and efficiency.

Data Collection

Data collection began after Texas Woman's University's Institutional Review Board approval was obtained. The researcher recruited students using a face-to-face visit at the beginning of the Fall 2009 clinical semester. The volunteer participants signed the informed consent form and completed the Demographic Data form. Copies of the Tobacco Assessment form were distributed with instructions. After enrollment, each participant was randomly assigned to either an intervention group or an attention control group. The *Rx for Change* training intervention and the attention control group's educational intervention was sent to the intervention group and the attention control group via the students' Blackboard Learning System. The GSEs was administered to both the intervention and the attention control groups at two different times: once in person at two-weeks post-intervention and another time via the Blackboard Learning System at 10-weeks post-intervention. The completed Tobacco Assessment forms were also collected at 10-weeks.

Treatment of Data

Data were analyzed using the Statistical Package for the Social Sciences (SPSS) computer program. Prior to the main data analysis, the data were screened for outliers and

normality of distribution. There were no missing data. Descriptive statistics were obtained from the Demographic Data form and the Tobacco Assessment form which included frequency distributions and measures of central tendency. A two-way mixed model repeated measures ANOVA was used to test hypothesis number one and *t*-tests were used to test hypothesis number two.

CHAPTER IV

ANALYSIS OF DATA

The purpose of this 10-week study was to determine whether nursing students who participated in the three-hour educational intervention *Rx for Change* tobacco cessation training program had an increase in general self-efficacy at two weeks and at eight weeks post-intervention delivery compared to the control group who did not participate in the *Rx for Change* program. Performance of tobacco cessation interventions between the two groups was also examined. The description of the sample and the tobacco counseling behaviors are presented in this chapter. The findings of the study are reported in the second section and are organized according to the two main hypotheses.

The two study conditions consisted of the experimental group receiving the three-hour *Rx for Change* program and the attention control group receiving a three-hour educational intervention unrelated to tobacco cessation counseling. Both educational interventions were delivered to the participants using an online Blackboard student learning platform during the first week of the study. General self-efficacy was measured by the Generalized Self-Efficacy Scale (GSEs) at two-weeks and at eight-weeks post-intervention delivery. Secondary outcome measures examined differences between the control and experimental groups in performance of tobacco use assessments and smoking cessation counseling tasks (the 5 A's).

Description of the Sample

The data analysis was conducted on a sample of 130 participants. The student participants were randomly assigned to a control or experimental group with 65 in each group. Characteristics of the sample are summarized in Tables 1 and 2.

The majority of participants were female, Caucasian, and married. Men and women were evenly distributed between the two groups. Slightly less than half the sample held associate degrees and nearly 20% were Licensed Vocational Nurses (LVNs). The majority had never attended tobacco-cessation counseling training before this study and had never smoked. Frequency distributions and percentages of the participants as a function of specified demographic categories are presented in Table 1.

Ages ranged from 19 to 56 and the mean age of participants was slightly above thirty years. Both groups were similar in age. Table 2 describes measures of central tendency for age by group and also illustrates that the majority of the participants currently were employed in addition to their student status. The control group contained a few more students that worked.

Table 1

Frequencies of Selected Demographic Characteristics Broken down by Group

Variable	Experimental (<i>n</i> = 65)		Control (<i>n</i> = 65)		Total Sample (<i>N</i> = 130)	
	<i>f</i>	%	<i>f</i>	%	<i>F</i>	%
Gender:						
Male	9	13.8	9	13.8	18	13.8
Female	56	86.1	56	86.1	112	86.1
Race/Ethnicity:						
White	50	76.9	46	70.7	96	73.8
African-Amer	7	10.7	11	16.9	18	13.8
Latino/Hispanic	5	7.6	4	6.1	9	6.9
Other	3	4.6	4	6.1	7	5.3
Marital Status:						
Married	34	52.3	42	64.6	76	58.4
Divorced	13	20.0	7	10.7	20	15.3
Single	18	27.6	16	24.6	34	26.1
Degree/License:						
LVN	9	13.8	16	24.6	25	19.2
Associate	30	46.1	25	38.4	55	42.3
Baccalaureate	2	3.0	2	3.0	4	3.0
EMT/Paramedic	3	4.6	6	9.2	9	6.9
Other	6	9.2	2	3.0	8	6.1
None	15	23.0	14	21.5	29	22.3
Work Currently:						
Yes	39	60.0	42	64.6	81	62.3
No	26	40.0	23	35.3	49	37.6
TCCT* Attended:						
Yes	2	3.0	3	4.6	5	3.8
No	63	96.9	62	95.3	125	96.1
Smoking Status:						
No, never	38	58.4	42	64.6	80	61.5
Yes, current	8	12.3	11	16.9	19	14.6
quit < 1 yr ago	2	3.0	3	4.6	5	3.8
quit > 1 yr ago	17	26.1	9	13.8	26	20.0

*TCCT = Tobacco Cessation Counseling Training

Table 2

Means and Standard Deviations for Age and Work Hours by Group

Variable	Experimental M (SD)	Control M (SD)	Total M (SD)
Age	<i>n</i> = 65 32.42 (8.60)	<i>n</i> = 65 33.12 (8.96)	<i>N</i> = 130 32.77 (8.58)
Work Hours	<i>n</i> = 39 12.58 (13.65)	<i>n</i> = 42 14.50 (14.33)	<i>N</i> = 81 13.54 (13.91)

Findings

The findings of the data analysis are organized around two research hypotheses. Data from the GSEs were collected at two weeks and at eight weeks post intervention delivery. There were no missing data. The first research hypothesis stated that “nursing students who participate in the three-hour *Rx for Change* tobacco cessation training program will have an increase in general self-efficacy at two-weeks post training and at eight-weeks post training compared to nursing students who participate in a three-hour attention control intervention.” As seen in Table 3, the GSE scores are high for both groups at both two and eight weeks with slight differences detected.

Table 3

Means and Standard Deviations of GSE Scores for Experimental versus Attention Control Group Across Time

Time	Experimental <i>n</i> =65 M (SD)	Control <i>n</i> =65 M (SD)	Total <i>N</i> =130 M (SD)
GSE 2 weeks	33.00 (3.65)	33.32 (3.57)	33.16 (3.60)
GSE 8 weeks	34.14 (3.56)	32.51 (3.53)	33.32 (3.63)
TOTAL	33.57 (3.61)	32.92 (3.55)	33.24 (3.62)

A mixed effects ANOVA was employed to determine whether the mean differences were significant. Prior to hypothesis testing, a Levene's test assessing equality of error variance was conducted. The test was not significant so the assumption of homogeneity of variance was upheld. A mixed model ANOVA was conducted to explore the impact of a tobacco-cessation training intervention versus an attention control intervention on general self-efficacy over two time periods (two weeks and eight weeks post intervention). Results are displayed in Tables 4 and 5.

Table 4

ANOVA Summary for Interaction Effects of Group Type by Time and Within Effects for Time

Source	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
GSE (2 vs. 8 weeks)	1.696	1	1.696	.483	.488
GSE time x Group Type	62.035	1	62.035	17.654	.000
Error (GSE)	449.769	128	3.514		

Table 5

ANOVA Summary for Between Group Effects for Time

Source	Sum of Squares	<i>df</i>	Mean Square	<i>F</i>	Sig.
Group (exp vs. control)	27.788	1	27.788	1.257	.264
Error	2830.446	128	22.113		

The interaction effect was examined first. There was a significant interaction effect seen between intervention type and time, [$F(1,128) = 17.654, p < .000$]. Students in the experimental group had slightly lower general self-efficacy scores at two weeks and higher general self-efficacy scores at ten weeks than the attention control group (Figure 1). Thus there was a difference between the control and experimental groups on self-efficacy. The experimental group started with lower GSE scores than the control group at two weeks, but displayed higher GSE scores by week 10 of the study or at the eighth week post educational intervention. There were no significant main effects.

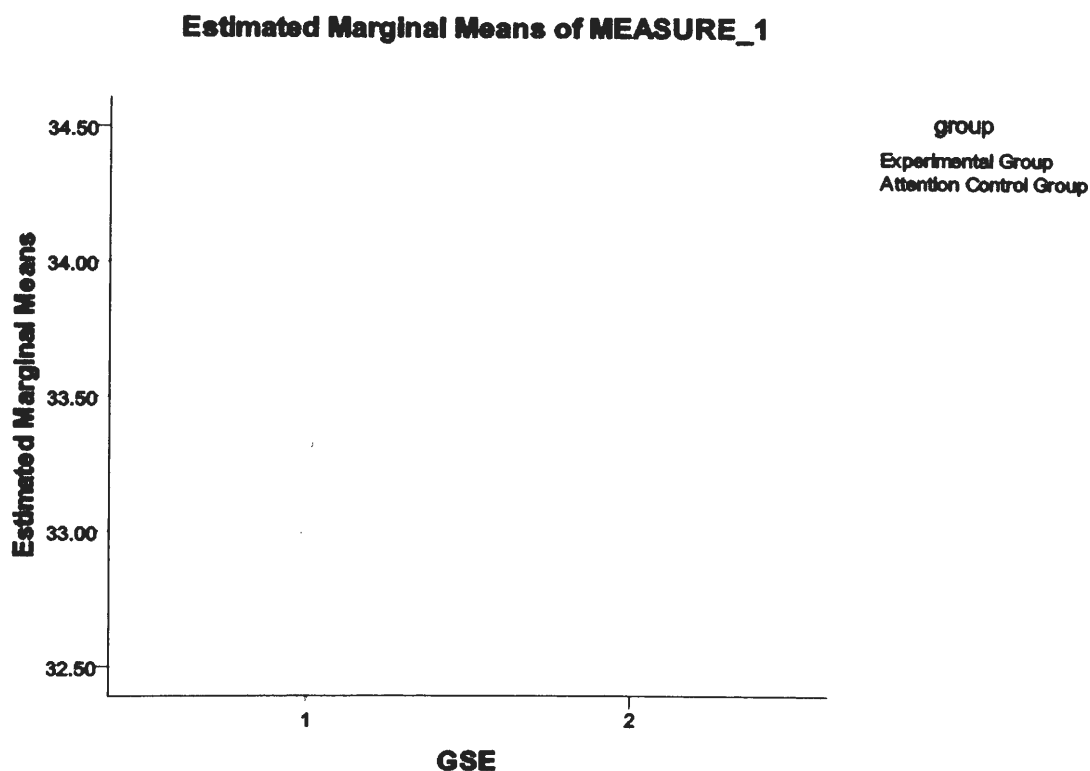


Figure 1. *Interaction of the two groups estimated GSEs means from across two time periods*

The second research hypothesis stated that “nursing students who participate in the three-hour *Rx for Change* tobacco cessation training program will assess and counsel patients about tobacco cessation more frequently than nursing students who do not participate in the training program.” The participants recorded each occurrence of a tobacco counseling behavior with a patient. When examining the tobacco counseling behaviors (TCBs) by the participants, patterns were noted. Table 6 displays the frequencies and percentages of the tobacco counseling behaviors by group and as a total sample. The 130 students asked over 2,000 patients if they used tobacco. They also

conducted more than twice that amount (5,488) of tobacco counseling behaviors over a 10-week period. Overall the experimental group conducted more TCBs than the control group.

Table 6.

Frequencies of Tobacco Counseling Behaviors (TCBs) by Group

TCB 5 A's	Experimental		Control		Total Sample	
	<i>f</i>	%	<i>f</i>	%	<i>F</i>	%
ASK	1084	35.70	944	38.49	2028	36.95
ADVISE	549	18.08	440	17.94	989	18.02
ASSESS	444	14.62	396	16.15	840	15.30
ASSIST	620		428		1048	
Written	304	10.01	196	7.99	500	9.11
Phone	316	10.40	232	9.46	548	9.98
ARRANGE	339	11.16	244	9.95	583	10.62
Totals	3036	100	2452	100	5488	100

Table 7 shows the means and standard deviations of the TCBs by group. The average total tobacco counseling (TTC) behaviors and TTC minutes by group are also displayed in Table 7. Students in the experimental group conducted on average slightly more total tobacco counseling behaviors than the control group. Students in the experimental group spent more total time in minutes on average on tobacco counseling behaviors than the attention control group.

Table 7

Means and Standard Deviations (SD) of Tobacco Counseling Behaviors by Groups

Tobacco Counseling Behaviors	Experimental Group (<i>n</i> = 65)		Control Group (<i>n</i> = 65)		Total (<i>N</i> = 130)
5 A's	<i>M</i>	(<i>SD</i>)	<i>M</i>	(<i>SD</i>)	<i>M</i> (<i>SD</i>)
ASK	16.67	(9.70)	14.52	(8.67)	15.6 (9.19)
ADVISE	8.44	(6.14)	6.76	(6.25)	7.60 (6.20)
ASSESS	6.83	(5.26)	6.09	(6.37)	6.46 (5.81)
ASSIST:					
Written	4.67	(6.35)	3.01	(3.83)	3.84 (5.27)
Phone	4.86	(6.50)	3.56	(5.87)	4.21 (6.18)
ARRANGE	5.21	(6.45)	3.75	(5.68)	4.48 (6.07)
TTC Behaviors	46.70	(36.36)	37.72	(33.12)	42.21 (4.49)
TTC MINUTES	50.54	(45.50)	31.63	(35.00)	41.08 (41.37)

Results were analyzed using six independent *t*-tests to examine the difference in the control and experimental groups on the five tobacco counseling behaviors of ask, advise, assist, assess and arrange, and on the overall number of counseling minutes. A Bonferroni adjustment factor was applied to the alpha value to protect against the commission of a Type 1 error. The adjusted alpha used for determining the significance of the six *t*-tests based on the Bonferroni calculation was .008.

The *t*-test values for the 5 tobacco counseling behaviors were not significant . However, the *t* test for the total tobacco counseling minutes was significant: [*t* (128) = 2.65, *p* = .009]. The experimental group engaged in significantly more counseling minutes than the control group.

Summary of the Findings

The major findings are summarized as follows: both groups had high general self-efficacy scores at two and at 10 weeks of the study. There was a significant interaction effect between the type of intervention and time passage. The nursing students who participated in the three-hour *Rx for Change* tobacco cessation training program had slightly lower general self-efficacy scores at two weeks post intervention, but had higher general self-efficacy at eight weeks post intervention (at the end of their clinical rotation). The nursing students who participated in a three-hour attention control intervention had slightly higher self-efficacy scores at two weeks and lower self-efficacy scores at 10 weeks. When examining behavior, the experimental group spent significantly more time in tobacco counseling behaviors than the control group.

CHAPTER V

SUMMARY OF THE STUDY

The major purpose of this study was to determine if the *Rx for Change* tobacco-cessation counseling educational program could impact self-efficacy in nursing students over two time periods. The secondary aim was to ascertain if the tobacco education could also influence the frequency of tobacco counseling behaviors. These research problems were undertaken using an experimental two-group repeated measures design. This chapter presents a summary of the study, and a discussion of the findings, conclusions and the implications for nursing. Recommendations for future research regarding tobacco-cessation counseling education and interventions for nursing are also discussed in the context of Bandura's self-efficacy theory.

Summary

This 10-week study was a randomized, controlled, two-group repeated measures trial. The data were collected from 130 second-year student nurses enrolled in an associate degree nursing program at one southwestern United States community college. The volunteer participants signed informed consents and were randomly assigned to a treatment or a control group. The two study conditions consisted of the experimental group receiving the three-hour *Rx for Change* tobacco-cessation educational intervention and the attention control group receiving a three-hour educational intervention on nursing

topics unrelated to tobacco cessation counseling (PowerPoint slides on the topics Methicillin-resistant *Staphylococcus aureus* (MRSA), Meningitis and Encephalitis, and Pressure Ulcers). The two educational interventions were delivered via a Blackboard student learning system forum and the students had two weeks to read their respective programs. The independent variable was the educational intervention and the dependent variable was self-efficacy. Self-efficacy was measured by the Generalized Self-Efficacy Scale at two different time points: two-weeks post-intervention and at eight-weeks post-intervention, which also corresponded to the tenth week of the study.

The participants were also asked to document prospectively the frequency of their performance of tobacco use assessment and smoking-cessation counseling tasks (the 5 A's) for their hospital patients during their 10-week clinical rotation. These 5 A's included the number of patients who were *asked* if they were tobacco users, the number of smokers who were *advised* to quit, the number of smokers who were *assessed* for their readiness to quit, the number of smokers who were *assisted* in quitting (given written materials and a quit-line phone number), and the number of smokers who were encouraged or *arranged* for follow-up for smoking cessation assistance. The students submitted the completed forms at the end of the clinical semester.

Discussion of the Findings

The analysis of the data found a significant interaction effect between the type of intervention and the time period. Students in the experimental group initially had lower general self-efficacy scores at two weeks compared to the attention control group but

scored higher in general self-efficacy at 10 weeks. In fact, the control group's self-efficacy scores decreased at 10 weeks; this was the time period after their attention control intervention. The students in the experimental group spent significantly more time on tobacco counseling behaviors than the students in the control group. There were no differences found in the frequency of counseling behaviors employed by the two groups.

Similar to this dissertation, numerous researchers have examined whether education or a clinical practicum can improve students' self-efficacy, health promotion counseling behaviors in general or tobacco counseling skills specifically. In the nursing literature, self-efficacy related to health teaching increased in nursing students after a 12-week preceptorship (Goldenberg et al., 1997). Almost a decade later, the same researcher (Goldenberg et al., 2005) found comparable results: self-efficacy of student nurses increased after two half-day workshops on simulated health teaching. Other investigators found that students had increases in self-efficacy and increased perceptions of tobacco counseling abilities after a semester long adapted *Rx for Change* online course (Zillich et al., 2007). Medical and pharmacy students that received both didactic instruction and the opportunity to practice skills were also able to demonstrate competency and increases in self-efficacy (Brown et al., 2004; Hudmon et al., 2003). In the Hyndman (2005) dissertation, the researcher found that when hospital-based nurses received an educational intervention, they could also improve their self-efficacy scores. Clearly, in all of the above studies, education appeared to be particularly important to counseling behaviors and was the strongest predictor of provider self-efficacy.

As was a finding in this dissertation, the *Rx for Change* trained nursing students had increased self-efficacy scores at the end of the semester and also spent more time in counseling than the control group, the Borrelli et al., researchers (2001) found that the nurses who were confident that their tobacco cessation advice would motivate patients to quit also spent more time in counseling behaviors. As well, when this dissertation is compared to the Cochrane meta-analysis of trained health care providers (Lancaster et al., 2000), those that were trained spent more time and performed more tobacco cessation interventions than untrained providers. There are additional studies analogous to this dissertation.

In a study evaluating the *Rx for Change* program among pharmacy students, the volunteer students received seven to eight hours of tobacco-cessation training in a structured curriculum (Corelli et al., 2005). The results of this pharmacy study indicated that the students' perceived confidence and ability to provide cessation counseling improved significantly after the eight-hour training. The majority of the participants also indicated that the number of patients they expected to counsel on tobacco cessation would increase.

In a more recent quasi-experimental study (Borrelli et al., 2008), researchers prospectively evaluated whether training 98 home health nurses with the 5A's program was associated with changes in attitudes towards smoking-cessation counseling and counseling behaviors. At 6-months post-training, compared with pre-training, the home health nurses reported significantly higher levels of self-efficacy to counsel patients with

positive outcome expectations, and optimism that patients would follow their advice, as well as a perceived worth of smoking counseling, perceived importance of quitting smoking, and perceived organizational support. Nurses were also significantly more likely to ask about smoking status, assess readiness to quit, advise to quit, assist with quitting, arrange follow-up, spend more time counseling smokers, and were less likely to selectively counsel. In future research, the performance of tobacco counseling behaviors, the behavioral component, could be increased to two semesters instead of 10 weeks.

In this study, the educational intervention was delivered via an internet platform not in the classroom environment of a college course. Although the format type was not the subject of testing, there have been a number of studies that revealed increased nursing students' self-efficacy after the use of computerized educational methods (Babenko-Mould, Andrusyszyn, & Goldenberg, 2004; Madorin & Iwasiw, 1999; McConville & Lane, 2006). Future studies could explore delivering the *Rx for Change* program via internet home study versus live classroom training. All these findings are germane to Bandura's (1986) premise that self-efficacy is malleable and can be enhanced through training.

It was quite appropriate that Bandura's (1986) self-efficacy learning theory provided the theoretical foundation for this experimental study. Self-efficacy theory has applications relevant to nursing education and practice. The underlying premise of the theory embraces the relationship between three major determinants, the individual, their behavior, and the environment. Bandura referred to this as reciprocal determinism or

triadic reciprocal causation. In this research, Bandura's triad involved delivering the tobacco-cessation counseling educational program (the environment) so that the students (the individuals) could apply (their behavior performance) the current evidence-based practice guidelines on tobacco cessation to patient situations. The Blackboard Learning System provided the educational environment for the training intervention and the individual student nurse's performance in tobacco cessation assessment and counseling were the behaviors. Whether the *Rx for Change* tobacco-cessation counseling training improved the experimental group's self-efficacy scores and the frequency of their counseling behaviors more often than the controls were the primary tests of this research.

Self-efficacy theory, a component of Social Cognitive Theory, describes the critical elements necessary for individuals to alter their environment and behavior through their perceived self-efficacy. A person's sense of competence or belief can affect a pattern of successful behaviors. A person who believes in being able to produce a desired effect can conduct a more active role in their environment. A strong sense of competence facilitates cognitive processes and performance in a variety of settings, including decision-making and educational achievement.

The training intervention in this proposed study was designed to facilitate a sense of competence and performance of patient interventions in the area of tobacco-cessation counseling. That the tobacco intervention did not increase the two-week self-efficacy scores in the experimental group compared to the control group can be explained by the timing of the intervention with the GSEs. The students had two weeks to read their

educational interventions on Blackboard. At the end of that time frame, the first GSEs was delivered. This can be considered a base score for both groups. The sense of competence (self-efficacy) for the experimental group can be interpreted as increasing when examining their eight-week GSEs. Their scores increased and the control group's scores decreased. Additionally, however, it may be argued that the instruction and use of the Tobacco Assessment form could be understood as an educational intervention in itself. The experimental group spent more time in counseling than the control group.

In line with current research, this study premise supports the notion that self-efficacy is a modifiable factor that can be targeted and positively impacted in interventions. Specifically, the researcher indicated that the educational intervention, *Rx for Change*, can have an influence on the participants' self-efficacy scores. Study of this area is relevant because according to self-efficacy theory, an individual's self-efficacy for a specific task (i.e., tobacco cessation training), weighs on his/her choice of the endeavors, how much effort they will expend, and of how long they will sustain effort in dealing with the situation (Bandura, 1997). Thus, according to self-efficacy theory, the change in the participants' self-efficacy scores indicates that actual behavioral changes should follow.

Because this research was focused on the outcomes of a one-time educational program, limitations did exist. The educational interventions were presented to both groups via their Blackboard learning system. In order to give due time to the reading of their respective program, both groups were told they had two weeks to complete their

reading. When participants completed their reading, they were instructed to generate a one-time brief message on the Blackboard discussion forum stating that they were finished with their reading. The discussion board was open to the nursing instructor only; students could not see when or what other students posted. The two-week due date corresponded to the date of the first administered general self-efficacy scale. This first score could be interpreted as a basic score for both groups. There were no significant differences in the first GSEs between the two groups, but the experimental group did score slightly lower than the control group. Completing the Tobacco Assessment forms was a learning exercise in itself, and could be considered another intervention. Threats to internal validity (i.e., maturation) were lessened, however, because the program was conducted over such a short period of time.

Nursing professors have the challenge of improving the academic learning, the environmental process and the learning product, the skill level, and the confidence of the students. Using social cognitive theory as a framework, teachers can work to improve their students' thinking (personal factors), improve their skills and self-regulatory practices (behavior), and alter the educational structure so that it may work to facilitate student success (environmental factors).

Conclusions

The following conclusions were derived from the findings of this study:

1. All students displayed high degrees of self-efficacy.
2. Students who received the *Rx for Change* intervention displayed greater self-efficacy eight weeks after the intervention.
3. Students who received the *Rx for Change* intervention spent more time counseling patients on tobacco cessation behaviors.
4. The *Rx for Change* program is an effective educational tool to increase the amount of time caregivers spend on tobacco cessation counseling.

Implications

The following are implications for practice:

1. The *Rx for Change* program needs to be implemented to increase time spent on tobacco cessation counseling behaviors.
2. Self-efficacy of health care givers can be increased with online educational opportunities and with the time to perform evidence-based skills.
3. Nurses who demonstrate self-efficacy increases after educational offerings can further develop their skills in practice.

Recommendations for Further Study

The following recommendations are made for future research:

1. Explore delivery of the *Rx for Change* program via online home study versus live classroom training.
2. Examine whether the length of training (for example, three hours versus eight hours) makes a difference in self-efficacy and in the frequency of tobacco counseling behaviors of the health care students or providers.
3. Examine if an increase in clinical time (two semesters instead of 10 weeks) affects how the students perform tobacco counseling behaviors and affects their self-efficacy.
4. Determine which aspects of the *Rx for Change* program (i.e., PowerPoint slides, case scenarios for role playing, ancillary student and patient education handouts, etc.) influence the participants' self-efficacy.
5. Replicate investigation of self-efficacy in nurses with more diverse samples.

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APPENDIX A

Demographic Data Form

Demographic Data Form

Please answer these general questions about yourself:

1. What is your age? _____

2. What is your gender? ☐ 1. Male ☐ 2. Female

3. What is your race/ethnicity?

1. _____ White

2. _____ African-American

3. _____ Latino/Hispanic

4. _____ Asian or Pacific Islander

5. _____ American Indian, Alaskan Native

6. _____ Other, please specify _____

4. What is your current marital status?

1. _____ Married

2. _____ Widowed

3. _____ Divorced

4. _____ Single, never been married

5. Please check all that apply to you:

☐ LVN

☐ EMT

☐ Paramedic

☐ Associate Degree

☐ Baccalaureate

☐ Other (specify) _____

6. Do you currently work?

☐ 1. Yes ☐ 2. No

If yes, how many hours on average do you work each week? _____

7. Have you attended or participated in any training or course on tobacco cessation counseling?

☐ 1. Yes ☐ 2. No

8. Do you currently smoke?

☐ 1. No, never

☐ 2. Yes, currently

☐ 3. Former, quit less than a year ago

☐ 4. Former, quit more than one year ago

APPENDIX B

General Self-Efficacy Scale (GSEs)

General Self-Efficacy Scale (GSEs)

Please respond to the following items with one of the following:

- A. Not at all true
- B. Barely true
- C. Moderately true
- D. Exactly true

1. I can always manage to solve difficult problems if I try hard enough. _____
2. If someone opposes me, I can find the ways and means to get what I want. _____
3. I am certain that I can accomplish my goals. _____
4. I am confident that I could deal efficiently with unexpected events. _____
5. Thanks to my resourcefulness, I can handle unforeseen situations. _____
6. I can solve most problems if I invest the necessary effort. _____
7. I can remain calm when facing difficulties because I can rely on my coping abilities.

8. When I am confronted with a problem, I can find several solutions. _____
9. If I am in trouble, I can think of a good solution. _____
10. I can handle whatever comes my way. _____

APPENIDIX C
Tobacco Assessment Form

Tobacco Assessment Form

Instructions: There are five sections to this form (A thru E). Starting with section A, please ask as many patients as possible one question: Do you use tobacco? Place a check mark in each box every time you ask a patient if he/she uses tobacco. Each checked box represents one patient. If you ask no further questions then on the reverse page at the last section of boxes, fill in the time in minutes you spent on asking this question. The questions in sections B thru E are only for current smokers. Proceed to ask the next questions as appropriate. At the bottom of the reverse side, please be sure to check how much time you spent on the sections where each box represents one patient.

A. ASK All Patients. Do you use Tobacco?

Place a check mark in each box every time you ask a patient if he/she uses tobacco.

[*Please remember to fill-in the time you spent with each patient on the reverse side.]

ONLY COMPLETE SECTIONS B THRU E FOR CURRENT SMOKERS.

B. ADVISE smoker to quit. You can use this statement: "Quitting smoking is the most important thing you can do to improve your health".

Place a check mark in each box every time you advise a patient to quit smoking.

C. ASSESS patient's readiness to quit. Do you plan to quit?

Place a check mark in each box every time you ask a patient if he/she plans to quit smoking.

[PLEASE TURN TO OTHER SIDE FOR CONTINUATION]

D. ASSIST smokers to quit. Give written materials from the hospital to the patient:
Place a check mark in each box every time you gave written materials to a patient.

Recommend the toll free phone number 1-800-QUIT NOW (1-800-784-8669)
Place a check mark in each box every time you gave the patient the toll free phone number.

E. ARRANGE (Encourage) follow up with patient.
Place a check mark in each box every time you encourage the patient to follow-up with his/her provider for smoking cessation assistance.

*Place in each box the total time in MINUTES you spent on tobacco cessation counseling for each patient.

APPENIDIX D

Institutional Review Board (IRB) Approval Letter



Office of Research
6700 Fannin Street
Houston, TX 77030-2343
713-794-2480 Fax 713-794-2488

September 2, 2009

Ms. Gail Graham
College of Nursing – Rae Langford Advisor
6700 Fannin Street
Houston, TX 77030

Dear Ms. Graham:

Re: *Nursing student training, perception and behavior in tobacco cessation counseling: A randomized experimental study*

Your application to the IRB has been reviewed and approved.

This approval lasts for one (1) year. The study may not continue after the approval period without additional IRB review and approval for continuation. It is your responsibility to assure that this study is not conducted beyond the expiration date.

Any changes in the study or informed consent procedure must receive review and approval prior to implementation unless the change is necessary for the safety of subjects. In addition, you must inform the IRB of adverse events encountered during the study or of any new and significant information that may impact a research participant's safety or willingness to continue in your study.

Remember to provide copies of the signed informed consent to the Office of Research, HIS 10110 when the study has been completed. Include a letter providing the name(s) of the researcher(s), the faculty advisor, and the title of the study. Graduation may be blocked unless consents are returned.

Sincerely,

Dr. John Radcliffe, Chair
Institutional Review Board - Houston

APPENIDIX E

Consent to Participate in Research

TEXAS WOMAN'S UNIVERSITY
CONSENT TO PARTICIPATE IN RESEARCH

Title: Nursing student training, perception and behavior in tobacco cessation counseling: A randomized experimental study

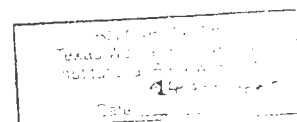
Investigator: Gail F. Graham, M.S.

Advisor: Rae W. Langford, Ed.D.

Explanation and Purpose of the Research You are being asked to volunteer for a research study for Ms. Graham's dissertation at Texas Woman's University. The purpose of this research is to determine the effect of an educational program on nursing students' perceptions for tobacco cessation counseling. Activities that you will be doing and your time commitment This is an experimental study. The total time commitment involves the time period from the starting date of the study to the end of your clinical semester, or about 10 weeks. This study involves you: (1.) reading and signing this informed consent (≤ 30 minutes); (2.) completing a Demographic Data form (≤ 10 minutes); (3.) using a Tobacco Assessment form for assessing your patients; (4.) completing two perception surveys, one sent to you in about two weeks and the other survey at the end of your clinical rotation (≤ 10 minutes for each survey); and (5) participating in a three-hour educational intervention over a two-week period that will be sent to you on Blackboard.

The Tobacco Assessment form: The time it takes to complete the Tobacco Assessment form is based on your own assessment time with each patient and by the number of patients you assess. On an average it requires ≤ 3 minutes if only asking patients if they use tobacco; it is about ≤ 10 minutes if advising current tobacco users to quit. For example, if only asking about tobacco use for 10 patients at ≤ 3 minutes each, the total time commitment over 10 weeks is 30 minutes; if advising 10 tobacco users to quit at 10 minutes each, the total time commitment over 10 weeks is 100 minutes. There is no limit to how many patients you may ask and advise. The Tobacco Assessment forms will be collected by the researcher in one of your classrooms at the end of the semester. Your clinical instructor will inform you of the date. After signing this informed consent and completing the Demographic Data form, you will be randomized to either Group 1 or Group 2. The groups will be divided evenly. Each of you will receive an email with your group assignment. If you are called Group 1: through your student Blackboard, you will receive a three-hour education consisting of power-point slides, counseling guidelines, and case studies. This training is based on the latest clinical practice guideline for assessing tobacco use. You will have two weeks to read the program. There are no tests. You will need to notify the researcher by email that you have read the program. You will receive a certificate of completion at the end of the study. Your total time commitment over the entire course of this study, including your tobacco assessment time is the following: average minimum time will be 4 hours, 30 minutes; average maximum time will be 5 hours, 40 minutes. If you are called Group 2: through your student Blackboard, you will receive a three-hour education consisting of power-point slides based on nursing topics unrelated to tobacco cessation. You will have two weeks to read the program. There are no tests. You will need to notify the researcher by email that you have read the program. You will receive a certificate of completion at the end of the study. Your total time commitment over the entire course of this study, including your tobacco assessment time is the same as Group 1 and is the following: average minimum time will be 4 hours, 30 minutes; average maximum time will be 5 hours, 40 minutes.

Your initials _____
Page 1 of 2



TEXAS WOMAN'S UNIVERSITY
CONSENT TO PARTICIPATE IN RESEARCH

Title: Nursing student training, perception and behavior in tobacco cessation counseling: A randomized experimental study

Potential Risks: A potential risk as a result of your participation is related to the consent form linking your name to the study. All other questionnaires will have your name changed to a number code. Confidentiality will be protected to the extent that is allowed by law. Because of the nature of the study, the researchers must contact you by email. There is a potential for loss of confidentiality in all email, downloading and internet transactions. A number code rather than your real name, will be used for data analysis. Only the investigator and her advisor will have access to the codes. All information collected from you and other participants will be grouped together. All information that can identify you will be removed from the data to ensure confidentiality. Your name will not appear in any report, publication or presentation resulting from this study. The data will be securely stored in the researcher's locked office in a password protected computer, and on a flash drive. All data and files will be destroyed within 5 years from the end of this study. There is also a possible risk of loss of time because of your total time commitment. The researchers will try to prevent any problem that could happen because of the research. You should let the researchers know at once if there is a problem and they will help you. However, TWU does not provide medical services or financial assistance for injuries that might happen because you are taking part in this research. Your participation is completely voluntary and you may withdraw from the study at anytime without penalty. Please advise the researcher if this is your decision. Although no guarantee can be made, you may potentially benefit by participating in this study. The knowledge and skills learned from the use of the Tobacco Assessment form may translate to the use of these skills with other patients. Another potential benefit to you is that at the completion of the study a summary of the results can be mailed to you upon request. The results of the study may give you information about nursing students counseling patients for tobacco cessation. *You will be given a copy of this signed and dated consent form to keep. If you have any questions about the research study you should ask the researchers; their phone numbers are at the top of this form. If you have questions about your rights as a participant in this research or the way this study has been conducted, you may contact the Texas Woman's University Office of Research and Sponsored Programs at 941-898-3378.* I have read the information presented in this consent form about a study being conducted by Gail Graham. I have had the opportunity to ask questions related to this study and to receive satisfactory answers to my questions. I am aware that I may withdraw from the study without penalty at any time by advising the researchers. I agree of my own free will to participate in this study with full knowledge of all foregoing

Print Name _____ Signature _____ Date _____
Your email address – PLEASE PRINT. _____
Phone number(s): home _____/_____ cell _____/_____ work _____
Please check if you would like a summary of the study results mailed to you: Yes__ No__
Your Mailing Address:

FOR THE RESEARCHER ONLY: The above consent form was read, discussed, and signed in my presence by _____ person signing said consent form did so freely and with full knowledge of its contents.

Signature of Investigator _____ Date _____
Signature of Observer _____

