Evaluation of Tobacco Cessation Classes Aimed at Hospital Staff Nurses

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Tobacco use leads to significant known health risks (U.S. Department of Health and Human Services [USDHHS], 2004). Tobacco-related diseases such as heart disease, chronic obstructive pulmonary conditions, stroke, and lung cancer can cause death or disability (Narsavage & Idemoto, 2003). Patients may still benefit clinically from tobacco cessation even when suffering from chronic conditions such as heart and lung diseases. Hospitalization can be an optimal time to assist smokers and tobacco users in cessation efforts because of increased health motivation by patients. According to Katz, Goldberg, Smith, and Trick (2008), of 2,684 hospitalized patients who were active smokers, 60% expressed a desire to quit smoking.

Active interventions provided by healthcare professionals, including nurses, can enhance the success rate of tobacco cessation among patients (Fiore et al., 2000; Lancaster, Silagy, & Fowler, 2000). Although these interventions can increase the odds of a patient quitting (Rice & Stead, 2001), hospital nurses may be ill-prepared to provide their patients with tobacco cessation counseling (McCarty, Zander, & Hennrikus, 2001). Few programs are available to empower nurses to provide tobacco cessation education to patients, and few nurses have been exposed to such content in their professional education (Wewers, Kidd, Armbruster, & Sarna, 2004).

Studies indicate that nurses lack knowledge related to tobacco cessation strategies or do not use the strategies with their patients. Nurses with a personal history of smoking described a lack of knowledge about tobacco cessation counseling among their nurse colleagues, leading to a lack of support for those trying to quit (Bialous, Sarna, Wewers, Froelicher, & Danao, 2004). In a survey of 1,690 hospital nurses in China, most reported having some knowledge of health effects from tobacco use, but seldom or never practiced counseling strategies that involve assistance or arranging follow-up counseling for smokers (Chan, Sarna, Wong, & Lam, 2007). A comparison of attitudes and practices for tobacco cessation counseling by provider type found that nurses

Purpose/Objectives: To evaluate a three-hour smoking cessation program and its effect on nurse knowledge, counseling behaviors, and confidence in counseling behaviors.

Design: Program evaluation.

Setting: A Magnet®-designated, 500-bed community hospital in Southern California.

Sample: 107 nurses.

Methods: Program content included behavior counseling and pharmacotherapy along with role playing. Investigator-developed self-report surveys were completed on the day of the class and at 3, 6, and 12 months.

Main Research Variables: Short- and long-term changes in nurse knowledge, attitudes, and behaviors about tobacco cessation efforts.

Findings: Knowledge significantly increased from baseline to post-test. Counseling skills improved. Nurses who completed all surveys exhibited no significant changes about asking patients to quit smoking but did demonstrate significant changes at three months regarding advising patients, assessing quit readiness, and providing assistance. Changes were maintained over the year. Nurses' average ability to counsel patients was rated "good or very good" after one year. At 3, 6, and 12 months, most respondents reported providing cessation counseling or referrals to at least one patient.

Conclusions: These findings support tobacco cessation programs for bedside nurses as useful in enhancing nurse confidence in patient-counseling skills.

Implications for Nursing: Study findings demonstrated benefits to using the developed curriculum. Additional research is needed on tobacco cessation programs for hospital nurses, particularly with longitudinal outcomes and actual nurse behaviors.

did not differ from physicians or nurse practitioners on attitudes, but they were less likely to practice cessation counseling compared to those two populations (Kviz et al., 1995).

Based on the published literature, very few programs have been developed to target healthcare providers, including nurses, about tobacco cessation counseling, despite the fact that healthcare professionals who receive training are more likely to intervene with tobacco

Table 1. Teaching Goals and Learning Objectives for Tobacco Cessation Classes for Nursing Staff

Goal	Time (Minutes)	Content to Cover	Method
Understand the need for smoking cessation	25	Etiology of tobacco use, five health risks associated with tobacco use, outcomes associated with clinical intervention, and benefits associated with tobacco use	Videos and PowerPoint® (Microsoft®) presentation
Application of skills	30	Case scenarios with participants discussing appropriate interventions for counseling	Role play, class participation, and group discussion
Demonstrate proficiency in providing comprehensive tobacco cessation counseling at the bedside.	40	The five A's (ask, advise, assess, assist, and arrange) of tobacco cessation counseling, signs in tobacco users who are ready for smoking cessation, different tools for tobacco cessation, case assessment of a mock patient using the five A's, and outpatient resources available to patients	PowerPoint presentation
Provide nurses with knowledge and skills necessary to provide comprehensive tobacco cessation counseling with NRT.	40	Biology of nicotine addiction and withdrawal, available NRT products, side effects and precautions with NRT use, proper use of each agent, and efficacy of various NRT agents	PowerPoint presentation and samples of NRT products

NRT—nicotine replacement therapy
Note. Based on information from University of California Schools of Pharmacy and Medicine, n.d.

cessation interventions than those who are not trained (Lancaster et al., 2000). Additional studies are needed to examine the significant role that nurses can play in motivating patients under their care to stop tobacco use and to identify a reason for the minimal participation of nurses in cessation education programs.

The purpose of this study was to evaluate an education program for nurses that focused on provision of tools necessary to counsel patients on tobacco cessation. Specific outcomes were nurse knowledge of tobacco harm and tobacco cessation interventions, confidence in counseling behaviors, and reported use of counseling behaviors with patients.

Methods

Design

This study was conducted to measure the effectiveness of a three-hour smoking cessation education program for hospital nurse participants up to a year from the completion of the class. In addition, this study evaluated whether nurses who completed a pretest assessment had improved knowledge at post-test compared with nurses who did not. The study was approved by the participating hospital's institutional review board. Nurse participants in all eight classes offered by the hospital's clinical education department from January 2007 to March 2008 were invited to participate.

At the beginning of each three-hour smoking cessation class, participants were randomized in a 1:1 ratio to either group A or B. Group A participants had pretest knowledge assessment questions included in their study packet; group B participants did not.

Intervention

The smoking cessation program was adapted from *Rx for Change: Clinician-Assisted Tobacco Cessation,* which was designed for pharmacy schools as a seven- to eight-hour curriculum (Corelli et al., 2005; Hudmon et al., 2003). The original curriculum, which was based on USDHHS (2004) guidelines, was modified into a three-hour program incorporating both lecture (behavior counseling and pharmacotherapy) and role playing. The course, taught by an oncology nurse and a pharmacist, was tailored for inpatient nurses (see Table 1) and covered the five A's (ask, advise, assess, assist, and arrange) used in tobacco cessation counseling. Nurses received a pocket tool entitled *Help Your Patients Quit Smoking* (California Department of Health Services, 2007). Evaluations from a pilot class conducted in 2006 led instructors to stress ask, advise, and arrange (or refer) as the most appropriate interventions for the bedside nurse in counseling patients in smoking cessation. The assumption behind this change was that these actions would afford the bedside nurse with timely assessments and enhance bedside interventions. The program was not a "train the trainer" course, but instead aimed to change behaviors of individual nurse participants.

Measures

Nurses completed self-report tools before and immediately after training, as well as 3, 6, and 12 months later. On all tools, higher scores indicated more favorable attitudes or knowledge. A 10-item **knowledge test** was developed and validated by two pharmacists and a nurse. Because of a coding issue, only 9 of the 10 questions were evaluated (see Table 2).

Table 2. Total Knowledge Scores for Nurses Who Did or Did Not Receive the Pretest

Group	Pretest (N = 42)		Post-Test (N = 59)	
	$\overline{X}$	SD	$\overline{X}$	SD
Pretest	5.4	1.62	7.36	1.36[a]
No pretest	–	–	7.4	1.39[b]

[a] Paired t test: t(41) = –6.179, p < 0.0001
[b] One-way analysis of variance: $F_{1,99}$ = 0.037, p = 0.85

The **Skill and Confidence for Smoking Cessation Counseling tool** with Likert-type responses was developed based on tools used with Rx for Change classes (Corelli et al., 2005; Hudmon et al., 2003) and was geared to nonpharmacists. Content validity was established through review by the nurse investigators involved in this study and two pharmacists involved in Rx for Change. A single item evaluated participants' perception of overall ability in cessation counseling. Five questions evaluated nurse skills in key competency facets of tobacco cessation counseling (the five A's). Overall ability and the five A's items were scored using a five-point scale ranging from 1 (poor) to 5 (excellent). Self-rated confidence for counseling was measured using nine items with a five-point response set ranging from 1 (not at all confident) to 5 (extremely confident).

The **posteducation survey** included one new question asking participants to estimate the number of patient referrals that have occurred after completing the smoking cessation class. This one-page survey included a question about overall ability in cessation counseling and four questions about key counseling competencies (identical to the skill and confidence pretest).

Procedures

At the beginning of all classes, the study was explained, questions were answered, and nurses were invited to participate. Those interested signed consent forms. The nurses completed the preeducation survey with or without the pretest depending on their designated group (A or B). At the completion of the class, all participants completed a post-test that was identical to the pretest. Follow-up surveys were mailed to each participant's designated contact address 3, 6, and 12 months after the class. Surveys were returned using a preaddressed envelope to the nursing research office. Only office staff members had access to participants' names and addresses. Surveys were sent at all time points even when a participant had failed to return a completed survey from a prior mailing. The surveys (pretest, post-test, and follow-up) were linked using the last four digits of a participant's social security number.

Data Analysis

Data were analyzed using SPSS®, version 15.0. Descriptive statistics (e.g., percentages, means, standard deviations) characterized participant outcomes. Paired t test was used to determine differences in post-test scores from pretest in the pretested group (group A), and one-way analysis of variance (ANOVA) determined differences on post-test scores across groups. For scores on the four counseling competencies and the overall ability in counseling, repeated measures ANOVAs were run. Level of significance was set at 0.05. At baseline, internal consistency was good for the skills subset of items (five items, Cronbach alpha = 0.81) and excellent for the confidence subset (nine items, Cronbach alpha = 0.93).

Results

A total of 112 nurses attended the classes offered through the education department at a Magnet®-designated, 500-bed community hospital in Southern California. Of the nurses who attended, 107 signed informed consents and volunteered to participate in

Table 3. Pretest and Post-Test Knowledge Results

Item	Correct Response (%)	
	Pretest (N = 48)	Post-Test (N = 104)
Selected correct smoking cessation medication for hypertensive female patient with bulimia	74	85
Patients using nicotine patch can shower or bathe.	46	68
To diminish sleep disturbances while using the nicotine patch, the patch should be removed before bedtime.	33	74
Two to four weeks is the length of time after quitting tobacco that most nicotine withdrawal symptoms resolve.	27	80
It is true that tobacco users require multiple quit attempts.	73	84
When counseling a young adult woman using nicotine lozenge, it is not appropriate to counsel about weight gain after quitting.	75	87
Patients not yet considering quitting should be strongly advised to quit and provided with brief motivational interventions.	67	80
The most rapid method to administer nicotine into the bloodstream is by nasal spray.	45	80
Nicotine withdrawal symptoms do not include improved task performance.	88	94

the study. Seventeen nurses completed all five surveys for the study.

Change in Short-Term Knowledge: Effects of the Pretest

At the post-test, immediately following the completion of the tobacco cessation training class, nurses who received a pretest (group A) demonstrated significantly increased knowledge scores from baseline: from 5.4 out of 9 (60%) to 7.37 out of 9 (82%). Differences in post-test knowledge scores of group A and group B were not seen ($F_{1,99} = 0.037$, $p = 0.85$). Increases in items answered correctly from pretest to post-test can be seen in Table 3.

Change in Counseling Skills and Confidence in Cessation Counseling

Nurse participants reported improved patient counseling skills after participating in the course. Immediate pre- and post-test responses are seen in Table 4. Although about 80% of nurses at both time points believed that they had good to excellent skills in asking patients whether they use tobacco, only 23%–56% of nurses at pretest considered that they could advise, assess, assist, or arrange (provide counseling). A substantial increase in each of these counseling skills was shown by the post-test conducted immediately following the training.

Percentage of participants who perceived having a good to excellent overall ability to help patients quit tobacco increased from 24% to 81%. The number of participants who were moderately to extremely confident in specific smoking cessation counseling skills increased immediately after the program for all skill categories.

Table 5 shows average scores on counseling skills for all nurses who completed surveys at each time point. Average pretest scores increased from fair (pretest) to good on all counseling skills at 3, 6, and 12 months (except for very good average scores at 3 and 12 months for "asking patients whether they use tobacco"). Scores remained consistent from the 3-month time point to the 12-month time point for the nurses who completed the surveys. On average, nurses rated their ability to counsel patients to quit tobacco use as good to very good at follow-up.

Figure 1 shows changes in counseling skills over time for the 17 nurses who completed surveys at all five time points. No significant change was noted with regard to asking patients about tobacco use ($F_{4,13} = 0.33$, $p = 0.85$). Significant increases were seen in scores on advising patients to quit ($F_{4,13} = 4.526$, $p = 0.016$), assessing patients readiness to quit ($F_{4,13} = 8.69$, $p = 0.001$), providing assistance to patients contemplating quitting ($F_{4,13} = 12.943$, $p < 0.0001$), and overall ability to help patients quit ($F_{4,13} = 5.241$, $p = 0.013$).

Table 6 shows the number of patients counseled by nurses at 3, 6, and 12 months after the program. Percentage of nurses who counseled one or more patients is slightly greater than nurses who referred patients (81%–82% versus 59%–64%).

Post-Test Perceptions About Program Content

Of the 107 nurse respondents, (63%) said that most of the course content was new to them, that little was unnecessary (9%), and that most would be used (73%). Eighty-five nurses (80%) reported that the number of patients that they would be counseling to quit tobacco would increase, and 93 (87%) responded that the quality of that counseling would improve.

Discussion

The study findings add to the body of knowledge related to enhancing nurse preparation to counsel patients in tobacco cessation efforts (Borrelli, Lee, & Novak, 2008; Bryant, 2008; Kelley,

Table 4. Participants Reporting Good to Excellent Counseling Skills and Moderate to High Confidence in Skills: Pretest and Post-Test

Item	Pretest		Post-Test	
	n	%	n	%
Good, Very Good, or Excellent				
Overall ability to help patients quit tobacco?	26	24	87	81
Level of skills for				
Asking patients whether they use tobacco	85	79	92	86
Advising patients to quit	60	56	86	80
Assessing patients' readiness to quit	48	45	86	80
Providing tobacco cessation assistance	40	37	80	75
Providing patient counseling	25	23	79	74
Moderately, Very, and Extremely Confident				
Confidence in your				
Knowledge of appropriate questions to ask	34	32	89	83
Skills to counsel for addiction	25	23	80	75
Ability to provide motivations for those trying to quit	54	50	88	82
Knowledge of pharmaceutical products	26	24	86	80
Ability to know when to refer patients to physician	42	39	90	84
Ability to sensitively suggest tobacco cessation	58	54	95	89
Ability to provide adequate counseling	31	29	81	76
Ability to help recent quitters learn coping	29	27	85	79
Ability to counsel those not interested in quitting	31	29	78	73
No Response				
Knowledge about available resources	59	55	94	88

N = 107 for each category

Table 5. Nurses' Perceptions of Their Ability to Counsel Patients

Counseling Action	Pretest (N = 98)		3 Months (N = 39)		6 Months (N = 38)		12 Months (N = 34)	
	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD	$\overline{X}$	SD
Ask	3.69	1.1	4.33	0.8	3.87	1	4.24	0.7
Advise	3.06	1.2	3.72	1	3.87	1.1	3.85	0.9
Assess	2.65	1	3.28	1	3.53	1.2	3.56	0.8
Assist	2.36	1.2	3.49	0.6	3.35	1.2	3.59	1
Ability to help patients quit using tobacco	2.45	1.1	3.17	0.9	3.11	1	3.1	0.8

Note. Responses ranged from 1 (poor) to 5 (excellent).

Heath, & Crowell, 2006; Swallow & Dykes, 2004; Zarlin, Burke, Gaines, & Gauvin, 2008). The three-hour tobacco cessation program demonstrated immediate changes in nurse knowledge and both short- and long-term changes in attitudes and behaviors. Pretest knowledge scores validated the authors' suspicion that staff nurses had poor knowledge of tobacco harms and appropriate tobacco cessation interventions. Classes such as the one presented here seem to be an efficient way to increase staff knowledge about tobacco cessation. Nurse participants in the class gained self-confidence in tobacco cessation counseling skills beyond merely asking patients if they are interested in stopping smoking. Specifically, they gained skills in advising patients to quit, assessing patient readiness to quit, and providing assistance and counseling related to cessation. Most importantly, in the group of nurses who participated in the study for one year, nurses maintained their increased skills and overall ability to counsel and refer patients for tobacco cessation efforts.

Nurses' potential roles in tobacco cessation efforts have been reported and discussed internationally. In 2006, the National Institute for Health and Clinical Excellence (United Kingdom) recommended that people who smoke should be counseled to quit in any healthcare encounter, including ones with nurses (Carlebach & Hamilton, 2009). A survey of nurses working in 35 U.S. Magnet-designated hospitals found that, although most nurses (73%) asked and assisted with cessation, only 24% recommended pharmacotherapy aides, 22% referred patients to community resources, and 10% recommended use of cessation telephone help lines (Sarna et al., 2009). Of 87 pediatric emergency department nurses surveyed in Deckter, Mahabee-Gittens, and Gordon (2009), only 22% regularly assessed parental smoking status, 14% encouraged parental smokers to quit, and fewer provided counseling or direct assistance to their patients. Nurses are aware of the importance of tobacco cessation, but lack the counseling skills and confidence in cessation counseling as illustrated by the consistently low percentages that are reported. Training programs are needed and should be evaluated systematically. Future studies are needed to determine whether changes in nurses' confidence in their skills actually lead to altered behaviors and whether these behaviors lead to changes in patient tobacco use.

The current study offers findings from one of the few programs that have been evaluated in longitudinal designs for changes in nurses' tobacco cessation counseling skills. Bryant (2008) documented immediate knowledge changes for hospital nurses who took part in a 30-minute class based on national guidelines. Kelley et al. (2006) reported that advanced practice nurses who participated in a six-hour training program significantly increased their mean scores on tobacco cessation and self-efficacy two weeks following course completion. Borrelli et al. (2008) found that homecare nurses trained to deliver smoking cessation counseling had enhanced training effects immediately and at six months. The current study is the first to report outcome measurements up to one year, and the authors are encouraged by changes that were maintained in the small group of nurses with data for the entire year. The authors encourage others to evaluate education programs longitudinally.

This may be the first study to evaluate nurse estimates of patients counseled or referred after training in tobacco cessation. Unexpectedly, the authors found that nurses were more likely to counsel patients than to refer
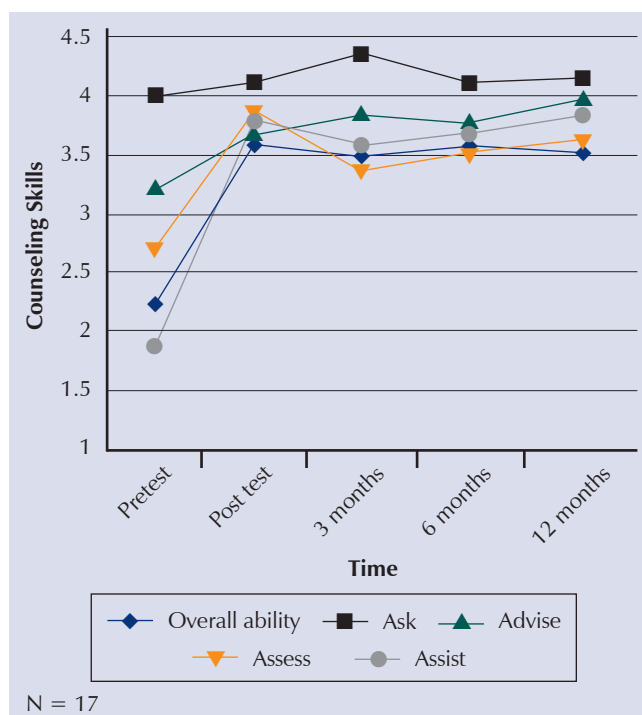
Figure 1. Counseling Skills Over Time for the Smoking Cessation Counseling Tool

Table 6. Patients Counseled at 3, 6, and 12 Months After the Tobacco Cessation Program

Variable	3 Months (N = 39)		6 Months (N = 36)		12 Months (N = 29)	
	n	%	n	%	n	%
Patients counseled						
None	7	18	7	19	6	19
1–2	21	54	18	50	17	58
3–5	8	21	11	31	4	15
More than 5	3	8	–	–	2	8
Patients referred						
None	14	36	13	36	12	41
1–2	13	33	14	39	7	24
3–5	9	23	9	24	8	28
More than 5	3	8	–	–	2	7

Note. Because of rounding, percentages may not total 100.

them. This is puzzling, given that counseling requires knowledge about interventions and referral seems to be an intervention requiring less confidence and knowledge. However, the class offered at the authors' institution did incorporate role playing to provide nurse participants an opportunity to simulate real situations. This role playing may have enhanced the participants' confidence, enabling them to intervene more actively with patients desiring to quit tobacco use. The addition of study outcomes in future studies that record nurse estimates of numbers and types of actual patient interventions are needed to determine what impact nurses actually have in terms of patient interventions.

Findings from the authors' embedded clinical trial of a knowledge pretest indicate that administering a knowledge pretest did not affect post-test knowledge changes. In other words, educators may be more confident that using a knowledge pretest will not sensitize class participants to post-test knowledge examinations.

Limitations

This single group prospective study reflects an evaluation of the first of three years of tobacco cessation counseling classes offered to nurses at a community hospital in Southern California. Without a comparison group, confirming that all documented changes resulted from participation in this program is impossible. The hospital was embarking on an effort to have all nurses (more than 1,000 in total) take the course during this time period, but nurses were slow to sign up. The participants may be considered early adopters in that they were among the first to take the course. No demographic information was collected about the participants, limiting the authors' ability to describe the sample or determine associations across different participant groups. Another limitation was use of newly developed tools to measure knowledge, perceived skills to counsel patients, and numbers of patients counseled or referred. As with many longitudinal studies, participant attrition was an issue.

Conclusion

Limited research has evaluated programs aimed to enhance nurses' tobacco cessation knowledge and skills. The current study's findings suggest that a focused, three-hour curriculum that includes didactic and role-playing methods can enhance nurses' knowledge and attitudes about their own tobacco cessation counseling skills and that these changes may be stable over time. Additional research is needed that follows nurses who have received tobacco cessation counseling training over time and links nurse behaviors with patient care and patient outcomes. The results of such studies may enhance the understanding of the effectiveness of such programs.

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