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Is Provider Training Effective? Changes in Attitudes Towards Smoking Cessation Counseling and Counseling Behaviors of Home Health Care Nurses

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Abstract

Objective—We prospectively examined whether training home health care nurses is associated with changes in attitudes towards smoking cessation counseling and counseling behaviors.

Methods—We trained 98 home health care nurses to deliver cessation counseling to their patients. Measures were administered at pre-training, post-training, and six months later. This was part of a larger study conducted in Providence, RI, USA (1998–2002).

Results—Compared with pre-training, at post-training, nurses reported significantly higher levels of self-efficacy to counsel, positive outcome expectations, optimism that patients would follow their advice, perceived worth of smoking counseling, perceived importance of quitting smoking, and perceived organizational support. These training effects were maintained six-months later. Between the end of training and the six-month follow-up, nurses reported significant increases in their perceived effectiveness to counsel smokers and confidence to encourage behavior change. Compared with pre-training, at six month follow-up, nurses were significantly more likely to ask about smoking status, assess readiness to quit, advise to quit, assist with quitting, and arrange follow-up. Nurses spent significantly more time counseling smokers at 6 months than at pre-training, and were less likely to selectively counsel.

Conclusions—Brief training facilitates both short-and long-term changes in nurse attitudes and behaviors regarding smoking cessation counseling.

MESH

Nurse counseling; smoking cessation; Five A's; self-efficacy; provider counseling

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Introduction

Despite effective smoking cessation treatments, 20.6% of Americans smoke (CDC, 2006). The medical encounter provides a window of opportunity to access smokers who otherwise may not seek assistance with quitting, and provides a teachable moment whereby smokers may be more receptive to messages about health risks (McBride, Emmons, & Lipkus, 2003). Meta-analyses have shown that patients who receive counseling by physicians or nurses are 1.5 to 2 times more likely to quit than those who receive usual care (Fiore, 2000; Rice & Stead, 2004).

Approximately 30% of hospital patients are discharged to receive home care services. Home health care (HHC) nurses can help patients maintain abstinence post-hospitalization, as well as help motivate cessation in patients who are not yet quit. HHC nurses have multiple contacts over time with their patients, and counsel patients in their own homes, the environment in which patients receive cues to smoke.

In one study, only 2% of HHC nurses reported never discussing smoking with their patients who smoked; 36% spent 1 to 3 minutes counseling, 55% spent 3 to 10 minutes, and 6% spent greater than 10 minutes (Borrelli et al., 2001). Counseling by HHC nurses has been shown to be effective; in one randomized controlled trial, patients who received motivational counseling from their HHC nurse were twice as likely to be continuously abstinent through a 12-month follow-up, vs. those who received standard smoking cessation advice from their HHC nurse, despite the fact that 36% of the sample had no plans to quit at baseline (Borrelli et al., 2005). Among those who did not quit, those in the motivational group had significantly greater smoking reductions and more quit attempts (Borrelli et al., 2005).

Because HHC is a promising new channel for reaching smokers, a focus on training HHC nurses becomes important. Social cognitive constructs, such as self-efficacy (belief in one's ability to counsel patients), outcome expectations (belief that counseling patients can lead to successful cessation), and motivation to counsel, may be important in predicting counseling behaviors. Practical barriers (time limitations, inadequate training, reimbursement, other acute care priorities) and provider characteristics (years in practice) have been shown to be weak or non-significant predictors of tobacco counseling vs. social cognitive variables (Cabana et al., 2004).

Self-efficacy to counsel smokers is associated with increased tobacco counseling among physicians (Cabana et al., 2004; Frank, Winkleby, Altman, Rockhill, & Fortmann, 1991; Goldstein et al., 1997; Zapka et al., 1999) and nurses (Borrelli et al., 2001). One cross-sectional study of HHC nurses 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 (Borrelli et al., 2001).

Motivation to counsel smokers is also an important determinant of counseling. In one study, dentists who believed that tobacco cessation counseling is an important component of dentistry counseled more smokers (Albert et al., 2005). Among HHC nurses, perceived importance of counseling is associated with asking about smoking status, advising patients to quit, and assisting patients with quitting (Borrelli et al., 2001).

Outcome expectations are associated with increased counseling. Dentists who believed that they were successful in helping patients quit were three times more likely to advise patients to quit (Albert et al., 2005). Zapka et al. (1999) found that pediatricians who believed that counseling was effective were more likely to report counseling. In another study, HHC nurses who believed that their counseling would be effective at helping their patients quit were significantly more likely to recommend the use of nicotine replacement, and spent more time

counseling patients (Borrelli et al., 2001). In contrast, a study of 1,500 oncology nurses found that 74% cited “patient not motivated” as a barrier to counseling (Sarna et al., 2000).

The above studies are limited by cross-sectional designs and conceptual confusion (e.g., confusing self-efficacy and outcome expectations). The aims of the current study are to: 1) examine whether training HHC nurses is associated with changes in attitudes about providing smoking counseling, 2) examine whether training increases HHC nurses’ counseling behaviors 6 months post-training, and 3) determine which attitudes at the end of training are associated with provision of smoking counseling six months later. We hypothesized that training would be associated with positive changes in attitudes towards counseling as well as increases in nurse counseling behaviors. We further hypothesized that perception of organizational support would change as a function of training, and be positively related to greater implementation of nurse counseling. Lack of organizational support has been shown to be a barrier to counseling among physicians (Cabana et al., 1999; Hollis et al., 2000).

To our knowledge, no previous studies have assessed such a comprehensive constellation of social cognitive variables, their responsiveness to training, or whether or not changes are maintained over the long-term. Only one prospective study evaluated whether or not training was associated with changes in self-efficacy (Garg et al., 2007), but did not assess long-term sustainability. A study of social-cognitive predictors of counseling is important so that training curriculums can be geared to improvement of these factors. Few attempts have been made to align provider training in smoking cessation counseling with social-cognitive constructs that have been shown to predict health behavior change.

METHODS

Nurse Characteristics

Nurses were employees of a home health care agency (Visiting Nurse Association of Rhode Island; VNA). The VNA provides acute and chronic care to patients unable to visit their physician or those needing daily care. Although we had managerial support for mandatory nurse participation, 6 nurses could not participate because of anticipated medical leave, leaving a sample of 98 nurses ($N=93$ Caucasian; M age = 44 years ($SD = 9.5$), M education = 16 years ($SD = 1.4$) M = 19 years in nursing ($SD = 11.2$)); 31% former smokers, 13% current smokers).

Training

Nurses were part of a smoking cessation study in which they were randomized to deliver one of two smoking cessation interventions to their patients; one group delivered standard care (SC) consisting of brief advice to quit, based on the clinical guidelines (Fiore, 2000), and one group delivered a motivational enhancement intervention (ME) consisting of motivational strategies tailored to the patient’s readiness to quit. Both were delivered during the course of regular medical visits (Borrelli et al., 2005).

Nurses were randomized to SC or ME, then trained separately in cohorts of 10–15 per group by a Clinical Psychologist and an Oncology Nurse. Training included one day of didactics and role-plays, followed by monthly lunchtime booster sessions. Training consisted of: 1) information on cigarettes (prevalence and risks of smoking, benefits of quitting, withdrawal), 2) cognitive and behavioral techniques of smoking cessation (5 A’s, increasing confidence to quit, modifying smoking triggers, relapse prevention), and 3) pharmacological options. ME nurses were additionally trained in motivational strategies and communication techniques tailored to the patients readiness to quit (see Borrelli et al 2005). The dependent variables under investigation in the current study were common to both trainings (e.g., 5A’s). Analyses revealed no significant differences between ME and SC nurses on demographics or psycho-

social characteristics, thus supporting our decision to combine these groups. This study received ethical approval from our institution's Human Subjects Review Board.

Measures

Nurses completed self-report assessments at pre-training, immediately after training ("post-training"), and 6 months later. The measures were adapted from prior studies (Borrelli et al., 2001; Goldstein et al., 1998). On all measures, higher values indicate more favorable attitudes.

Attitudes

Self-Efficacy, or confidence in their ability to counsel patients who smoke, was rated on a scale of 1 to 10. Nurses were also asked how confident they were that they could encourage other behavior change, such as a healthy diet, among their patients (1 to 5 scale).

Importance of Counseling—Nurses rated their perceived importance of smoking counseling with two items (1 to 10 scales): The degree to which smoking counseling is a worthwhile part of their practice, and the degree to which they believed smoking cessation is important for their patients.

Perceived Effectiveness—Nurses' perception of the percentage of smokers in their caseload who *try to* stop smoking as a result of their counseling (0–100%).

Outcome Expectations—Nurses' perception of the percentage of smokers in their caseload who *successfully quit* as a result of their counseling (0–100%).

Patient Motivation—Nurses' beliefs regarding the degree to which they believed that their patients want to stop smoking (1 to 5 scale).

Patient Perceived Risk—Nurses' beliefs about how much their patients believe that smoking affects their health (1 to 5 scale).

Perception of Organizational Support—Nurses' rated their perception of how important smoking cessation counseling is to their agency (1–5 scale).

Counseling Behaviors

Amount of Time Discussing Tobacco Use—Self-reported per patient (minutes).

Consistency of Counseling—Nurses chose one statement that described their general strategy for discussing smoking counseling: 1. "I discussed smoking only if patients brought up the subject or appeared motivated to quit," 2. "I discussed smoking only if patients had a smoking-related health problem," 3. "I made it a point to discuss smoking with all of my patients who smoke, regardless of health status or interest in quitting," and 4. "I did not discuss smoking."

Five A's of Cessation Counseling—Nurses rated on a 1 to 5 scale ("1" = never and "5" = always) how often they "Asked" patients about their smoking status, "Assessed" motivation to quit, "Advised" patients to stop smoking, "Assisted" patient with quitting, and "Arranged" a follow-up to discuss quitting.

Analytic plan

We used a multivariate general linear model for repeated measures to assess both change in attitudes from baseline to the end of training (to capture the efficacy of the training on

immediate changes in attitudes) as well as change in attitudes between the end of training and the 6-month follow-up (to assess sustainability of changes).

We examined changes in nurse counseling behaviors between baseline and the 6 month follow-up using a multivariate general linear model for repeated measures. We recognize that the magnitude of behavioral change may differ between those entering training who frequently counsel smokers and those who counsel less often. Therefore, we categorized nurse counseling variables into discrete levels at baseline and estimated change over time within each of these baseline levels using Chi Square tests. For the 5 “As,” we collapsed into “Low” the following response choice categories: “Never/Seldom,” “Occasionally,” and “Often.” The response choices “Very Often” and “Almost Always” were collapsed into the “High” category. While this may seem overly conservative, we divided the categories to be consistent with Clinical Practice Guidelines that state that all smokers should be given the 5 A’s (Fiore, 2000). Finally, we used logistic regression to examine whether attitudes at the end of training predicted smoking cessation counseling behaviors at six-months post-training.

RESULTS

Change in attitudes: Pre to post-training

There were significant pre- ($M=5.71$, $SD=2.46$) to post-training ($M=7.23$, $SD=1.81$) increases in nurses’ self efficacy to counsel ($F(1,95)=45.27$; $p<.001$), perceived worth of counseling ($F(1,96)=50.76$; $p<.001$, pre $M=6.81$, $SD=2.50$; post $M=8.27$, $SD=1.78$), and perceived importance of quitting smoking ($F(1,96)=13.76$, $p<.001$, pre $M=7.81$ ($SD=1.98$), post $M=8.43$ ($SD=1.77$)). Nurses were significantly more likely to view smoking counseling as important to their organization at post-training ($M=4.30$ ($SD=.78$)) than at pre-training ($M=3.87$ ($SD=.87$), ($F(1,93)=21.12$, $p<.001$). Compared with pre-training ($M=1.85$, ($SD=4.56$)), at post-training ($M=4.87$, ($SD=10.08$)), nurses had significantly higher positive outcome expectations ($F(1,67)=6.58$, $p<.05$), greater optimism about patient adherence ($F(1,95)=18.65$, $p<.001$, pre $M=2.60$ ($SD=.76$); post $M=2.93$, ($SD=.60$)), and were more likely to believe that their patients would be motivated to quit smoking ($F(1,94)=8.47$, $p<.01$, pre $M=2.63$ ($SD=1.03$); post $M=2.91$ ($SD=.85$)).

Attitudinal Changes between post-training and 6 month follow-up

The positive effects of training on attitudes towards providing smoking cessation counseling were maintained at the six-month follow-up. Specifically, there were no significant changes from post training to the 6 month follow-up in nurses’ perceived self-efficacy to counsel, belief that smoking cessation counseling is a worthwhile part of nursing practice, perceived importance quitting smoking, outcome expectations, nurses’ optimism that patients would adhere to advice, nurses’ perceptions of patient motivation to quit, and nurses’ perceptions of organizational support for smoking cessation counseling.

Nurses’ perceptions about how concerned their patients were about the risks of smoking significantly increased from post-training ($M=3.26$ ($SD=.81$)) to the 6-month follow-up ($F(1,60)=4.35$, $p<.05$, $M=3.52$ ($SD=1.07$)). Nurses’ reported significant increases in their confidence to encourage behavior change in other areas (e.g., diet) between end of training ($M=3.47$ ($SD=.78$)) and the 6-month follow-up ($M=3.66$, ($SD=.78$); $F(1,61)=4.20$, $p<.05$), and in their estimates of perceived effectiveness of their smoking cessation counseling ($F(1,40)=6.23$, $p<.05$, post $M=8.85$ ($SD=13$); 6 month $M=19.72$ ($SD=29.41$)).

Change in Nurse Counseling Behaviors: Pre-treatment to 6-months

Nurses spent significantly more time counseling at 6 months ($M=17.8$ minutes) than at pre-training ($M=8.6$ minutes ; $F(1,47)=18.7$, $p<.001$). At pre-training, nurses who spent the least

amount of time counseling their patients (≤ 5 minutes) increased by an average of 12.8 minutes (SD=12.5) at 6-months; those who spent a moderate amount of time (>5 and ≤ 10 minutes) increased by 19.7 minutes (SD=14.6) at 6-months, and those who spent the most time (>10 minutes and ≤ 30 minutes), spent 22.5 minutes counseling at 6-months (SD=16.5).

Compared with pre-training, at the 6 month follow-up, nurses were significantly more likely to Ask patients about their smoking (6 months =75%; pre-training = 34%; χ^2 (1,62) = 9.78, $p < .01$), Assess motivation to quit (6 months = 66.7%, pre-training =13.7%; χ^2 (1,60)= 12.63, $p < .001$), Advise patients to quit (6 months = 85.7%) pre-training = 46.2%, χ^2 (1,60) = 8.90, $p < .01$), Assist patients with quitting (6-months = 83.3%; pre-training = 34%, χ^2 (1,59)= 9.42, $p < .01$) and Arrange follow-up (6 months = 16.7%; pre-training = 0%; F (1,56) = 15.9, $p < .01$).

At six months, nurses were significantly more likely to discuss smoking with all patients, regardless of health status or interest in quitting, than at pre-training (F (1,59)=7.55, $p < .01$). Nearly all nurses who discussed smoking with all patients at pre-training continued doing so at 6-months (96.6%). Of those who, at pre-training, selectively counseling, (reported not providing smoking counseling at all, or providing smoking counseling only if the patient appeared motivated or had a smoking related health problem), nearly 60% reported at the 6-month follow-up that they counseled all patients who smoked (χ^2 =12.4 (1,60), $p < .001$).

End of training attitudinal predictors of 6-month behavioral outcomes

Nurse perception of organizational support at end of training significantly predicted at 6 months whether they Asked patients about their smoking status (OR=5.32, 95% CI =2.15–13.03, $p < .001$), Assisted patients with quitting (OR=3.52, 95% CI= 1.52–8.13, $p < .001$), and Arranged follow-up (OR=4.59, 95% CI = 1.07–19.67, $p < .05$).

Nurses' perception of worth of smoking counseling as part of their nursing practice significantly predicted whether they Assisted patients with quitting (OR=1.41, 95% CI= 1.01–1.98, $p < .05$). As nurses' perceived importance of counseling increased by one unit, they were nearly 1.5 times more likely to Assist patients with quitting.

A surprising finding was that nurse ratings of their ability to encourage positive behavior (e.g. healthy diet) significantly predicted whether they asked patients about their smoking status. As nurse ratings of their ability increased by one unit, the odds or likelihood of their asking patients increased two-fold (OR=2.22, 95% CI = 1.01–4.84).

A large percentage of the missing data (35%) occurred between end of training and the 6 month follow-up, due to lay-offs at the organization, rather than non-compliance with counseling. Analyses revealed no significant differences between those with complete and those with missing data on demographics or key attitudinal and behavioral variables.

DISCUSSION

Our study has several unique features: 1) use of HHC nurses to deliver smoking cessation counseling, 2) prospective design to assess the association between training and subsequent nurse counseling, and 3) measurement of a variety of social-cognitive variables to assess which variables change in response to training, and whether or not they predict subsequent nurse counseling behaviors. Our three main findings were: 1) brief training was associated with change in HHC nurse attitudes towards delivering smoking cessation, and that these attitudinal changes were sustained over the subsequent six months, 2) there were significant increases in the frequency and duration of nurse counseling behaviors from pre-training to the six-month follow-up, and 3) attitudes towards counseling at the end of the training were predictive of nurse counseling behaviors at the six month follow-up. These results show that training that

targets theoretical constructs can influence changes in both attitudes and behaviors regarding smoking cessation counseling, and that these changes can be sustained over the long-term.

Several attitudinal changes were observed from pre-to-post training. Compared with pre-training, at post-training, nurses reported significantly higher levels of self-efficacy to counsel, greater perceived worth of smoking counseling to their practice, greater importance of counseling, greater importance of quitting smoking, greater importance of counseling to their organization, higher levels of optimism about whether their patients would follow their advice about behavior change recommendations, and greater belief that their patients would be motivated to quit smoking. These positive effects of training were maintained through the final assessment (six-month post-training).

Three of these attitudes predicted subsequent nurse counseling. As nurses' increased their perceptions of worth of smoking cessation counseling, they were 1.5 times more likely to assist patients with quitting smoking, which is consistent with cross-sectional of physicians (Park et al., 2003). Also, in our study, as nurse perceptions of organizational support for smoking counseling increased, nurses were five times more likely to ask patients about their smoking status, nearly four times more likely to assist patients with quitting, and nearly five times more likely to arrange follow-up. These results suggest that it is critical for supervisors to convey the importance of smoking cessation counseling as part of standard clinical care. Supervisors can attend trainings, provide pay and other incentives for training, have smoking counseling as a standard agenda item at unit meetings, integrate smoking cessation handouts with other standard patient handouts (e.g., service initiation papers and discharge papers), and periodically disseminate reminders of the importance of counseling to nurses (on paychecks, posters near mailboxes, etc).

The third attitudinal variable to predict nurse counseling was nurses' confidence in their ability to counsel patients in other areas of health behavior change. It may be that experience with providing smoking cessation counseling over the ensuing six months after training provides nurses greater confidence that they could effect behavior change in other areas as well. This finding could be used to convince insurers and hospitals that training in smoking cessation counseling could be even more cost-effective than previously thought, in that training in one area of health behavior change (i.e., smoking cessation) could enhance confidence to counsel patients about other areas of health behavior change (e.g., diet).

Our training was effective at increasing both the frequency of the 5 A's and duration of nurse counseling behaviors. Meta-analyses have shown a dose-response relationship between time spent counseling by HCPs, and the odds of successful cessation (Fiore, 2000). While studies have reported cross-sectional rates of the provision of the 5A's among various groups of HCPs (Sarna et al., 2000), to our knowledge, ours is the only one that reports changes in the delivery of 5A's pre and post training among nurses.

Training also affected the types of smokers nurses chose to counsel. At 6 months, nurses were significantly more likely to discuss smoking with all patients, regardless of health status or interest in quitting. Previous research has shown that providers have a tendency to only counsel those who are motivated to quit or who have a smoking-related disease (Thorndike, Rigotti, Stafford, & Singer, 1998), which is counter to clinical practice guidelines.

One limitation of our study is the moderately high attrition rates at 6-months. However, this was likely due to nurse layoffs within the organization; not likely related to non-adherence to counseling. Also, although counseling was based on self-report, we believe that the anonymity of the surveys as well as the return of them directly to the investigators (rather than to the organization) helped to ensure unbiased reporting. Other data sources, such as direct observation or secondary patient reports of nurse counseling behaviors, also have limitations.

Direct observation would be difficult in a home care environment, as a nurse's behavior may be affected by the knowledge that they are being observed. Moreover, patient's reporting of nurse behaviors may be unreliable, especially among older, medically ill patients. Nurses were also assured that the agency would not have access to their surveys, and that their performance evaluations would not be affected by their answers. Importantly, nurses believed that patient change in smoking behavior, not nurse attitudes and behaviors, were the focus of the study.

HHC presents an untapped opportunity to deliver smoking cessation counseling. Our study demonstrates that brief training is effective at changing nurse attitudes towards counseling to their patients and increasing the frequency and consistency of nurse counseling. Building nurses' perception of organizational support and increasing perceptions of the importance of smoking cessation counseling are important targets for training.

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Table 1
End of Training Attitudinal Predictors of Nurse Counseling Behaviors at 6 Months (N=63), 1998–2002, Providence, RI, USA.

Variable	Ask			Advise			Assess			Assist			Arrange		
	OR ¹	95% CI ²	P	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P	OR	95% CI	P
Follow advice	1.31	0.55–3.56	n.s.	1.21	0.45–3.22	n.s.	1.29	0.40–4.15	n.s.	0.55	0.21–1.52	n.s.	1.09	0.30–3.99	n.s.
Self-efficacy-other behavior change	2.22	1.01–4.84	<.05	1.01	0.52–2.28	n.s.	2.13	0.95–4.77	.065	1.40	0.68–2.87	n.s.	1.27	0.47–3.44	n.s.
Importance to organization	5.32	2.15–13.03	<.001	1.96	0.97–3.95	.058	2.79	0.96–8.09	.058	3.52	1.52–8.13	<.001	4.59	1.07–19.67	.04
Smoking risk	0.94	0.47–1.87	n.s.	0.74	0.37–1.63	n.s.	1.03	0.44–2.42	n.s.	0.94	0.457–1.94	n.s.	1.51	0.59–3.86	n.s.
Patient motivation to	1.52	0.84–2.74	n.s.	0.76	0.42–1.40	n.s.	1.19	0.59–2.39	n.s.	.097	0.55–1.73	n.s.	2.23	0.85–5.85	.10
Self-efficacy to counsel	1.00	0.77–1.31	n.s.	1.15	0.86–1.54	n.s.	0.79	0.52–1.11	n.s.	1.05	0.79–1.40	n.s.	1.06	0.71–1.58	n.s.
Counseling as worthwhile part of practice	1.22	0.93–1.64	n.s.	1.19	0.89–1.59	n.s.	1.21	0.82–1.77	n.s.	1.41	1.01–1.98	.045	1.67	0.92–3.02	.09
Importance of quitting	1.02	0.78–1.33	n.s.	1.12	0.85–1.47	n.s.	0.98	0.72–1.35	n.s.	1.22	0.91–1.65	n.s.	1.39	0.82–2.36	n.s.
Perceived Effectiveness	0.99	0.95–1.05	n.s.	1.00	0.95–1.05	n.s.	0.97	0.90–1.04	n.s.	0.98	0.93–1.03	n.s.	0.89	0.74–1.05	n.s.
Outcome Expectations	0.98	0.89–1.07	n.s.	1.03	0.92–1.15	n.s.	0.96	0.83–1.15	n.s.	0.95	0.85–1.06	n.s.	0.90	0.70–1.15	n.s.

¹ = OR= Odds Ratio

² = CI = Confidence Interval