

EVALUATING FAMILY PHYSICIANS' ROLE IN TOBACCO CESSATION

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ABSTRACT

Background: Smoking remains one of the most preventable causes of morbidity and mortality, significantly impacting public health. Despite the availability of clinical guidelines for smoking cessation, physician intervention rates remain low due to barriers such as limited time, inadequate training, and lack of confidence. This study evaluates the impact of a structured smoking cessation training program on the knowledge, confidence, and practices of healthcare providers in delivering smoking cessation counseling. **Methods:** A pretraining and posttraining survey design was used to assess changes in knowledge, attitudes, and practices among 30 family medicine residents and 20 faculty members. The training included didactic lectures, role-playing, group discussions, and evidence-based guidelines for smoking cessation, such as the 5 As approach and motivational interviewing techniques. Data were analyzed using chi-square tests to compare pre- and posttraining responses, with the Bonferroni correction applied for multiple comparisons. **Results:** Following the training, the percentage of participants who regularly asked patients about tobacco use increased from 62.2% to 86.4% ($p = 0.02$), while those assisting with cessation planning improved from 40.0% to 75.0% ($p = 0.01$). Confidence in using motivational interviewing techniques significantly increased, with the ability to "roll with resistance" improving from 35.6% to 72.7% ($p = 0.004$) and the use of open-ended questions rising from 44.4% to 81.8% ($p = 0.007$). Additionally, prescribing rates for nicotine replacement therapy increased from 51.1% to 84.1% ($p = 0.008$), and willingness to prescribe varenicline rose from 26.7% to 63.6% ($p = 0.01$). **Conclusion:** The smoking cessation training program significantly enhanced healthcare providers' knowledge, confidence, and clinical practices related to smoking cessation counseling. The findings highlight the effectiveness of structured educational programs in improving provider engagement in tobacco cessation efforts. Future research should explore additional strategies to sustain and further enhance these improvements in clinical practice.

INTRODUCTION

Smoking remains the most preventable cause of mortality, significantly impacting overall health and reducing life expectancy.^[1] It adversely affects nearly every organ in the body and is a major contributor to various illnesses. Additionally, nonsmokers are not immune to its effects; nearly 60% of children aged 3 to 11 years are exposed to secondhand smoke daily.^[3,4] Each year, approximately 443,000 individuals die prematurely due to smoking-related illnesses or exposure to tobacco smoke.^[2] Despite these alarming statistics, 19.8% of adults continue to smoke, with at least 39.8% making at least one attempt to quit annually.^[5]

However, overcoming nicotine addiction presents significant challenges, as its dependency mechanisms closely resemble those of drugs like heroin and

cocaine.^[6] Notably, nearly one-third of individuals who experiment with smoking develop a nicotine addiction.^[7]

Although quitting smoking is difficult, around 70% of smokers express a willingness to stop. Many are more inclined to quit when advised by a healthcare professional. Encouragingly, research has shown that even brief counseling interventions can increase smoking cessation rates by 30%.^[8-10] This highlights the critical role of healthcare providers in assisting smokers with quitting. However, intervention rates among physicians remain low.^[11,12] Several barriers may hinder their involvement, including time constraints, limited knowledge, and uncertainty about the effectiveness of interventions.^[4] A 2008 study revealed that fewer than 6% of healthcare professionals were familiar with the official treatment guidelines for tobacco dependence.

This gap in knowledge may stem from inadequate education, as 87% to 93% of medical professionals receive less than five hours of formal training in smoking cessation strategies.^[13] A meta-analysis from 2002 highlighted deficiencies in medical education concerning tobacco intervention, particularly regarding smokeless tobacco use and the integration of comprehensive cessation training. Studies suggest that patient-centered counseling methods are more effective than traditional lecture-based learning.^[14-16] Moreover, recent research has demonstrated that specialized educational programs can lead to positive behavioral changes among healthcare providers.^[17,18]

To address these issues, a training initiative was designed to evaluate the current attitudes, knowledge, and confidence of healthcare professionals in implementing smoking cessation strategies. The program aimed to enhance their skills through targeted education and assess the overall impact of the training on their clinical practices.

METHODS

Participants and Setting: This study included 30 family medicine residents and 20 faculty members from a community-based health clinic that serves as the primary outpatient training site for a family medicine residency program. The clinic recorded approximately 25,000 patient visits in the preceding year. The patient population comprised 40% males and 60% females. Insurance coverage among patients was distributed as follows: 48% were covered by Medicaid, 15% by Medicare, 25% had commercial insurance, and 12% were self-pay.

Interventions: A pretraining and posttraining survey design was implemented in this study. The survey, adapted from a previously validated instrument and used with permission from its original authors, assessed participants' knowledge, attitudes, and practices related to smoking cessation. One week before the training, participants were sent an email outlining the study's purpose and providing a link to the pretraining survey. A reminder email was also distributed within the same week. Participants were required to provide informed consent before completing the survey. The research protocol received approval from the appropriate institutional review board (No. 2022.014).

The smoking cessation training program was conducted during a scheduled 2.5-hour educational session, which was part of the residency's standard curriculum. The session began with an overview and distribution of resource materials, including presentation slide sets, a tobacco cessation clinician resource guide, patient education brochures, a referral form for smoking cessation support services, an addiction assessment chart, and motivational tools such as a readiness ruler and quit-line information materials. The training covered the official smoking cessation guidelines, the Fagerström

Test for nicotine dependence, and the widely recognized 5 As approach—Ask, Advise, Assess, Assist, and Arrange.

The next segment of the program introduced participants to motivational interviewing techniques, focusing on strategies for engaging patients in behavior change. The session covered the REDS method, which includes rolling with resistance by acknowledging but not confronting a patient's ambivalence, expressing empathy through reflective listening, developing discrepancy between a patient's values and their smoking behavior, and supporting self-efficacy. Additionally, the OARS technique was reviewed, emphasizing open-ended questioning, affirming positive steps, reflective listening, and summarization to encourage behavior change. These techniques were demonstrated through pre-recorded role-playing videos, followed by group discussions in which participants analyzed the scenarios and provided feedback. A confidence and importance ruler was also introduced, which asks patients to rate on a scale from 0 to 10 how important quitting smoking is to them and how confident they feel about their ability to quit. These ratings were used to guide goal-setting for cessation efforts.

The final portion of the training focused on the physiological effects of nicotine, the mechanisms of nicotine addiction, and the health consequences of tobacco use. The session also addressed nicotine withdrawal symptoms and reviewed evidence-based pharmacologic interventions for smoking cessation, including nicotine-replacement therapies (both over-the-counter and prescription options), bupropion SR, varenicline, and combination therapies. Additionally, discussions covered the extended use of pharmacotherapy, the cost-effectiveness of various treatment approaches, and strategies for preventing relapse.

Participants who were unable to attend the live session were given access to a recorded version of the training and received all associated educational materials. Three months after the training, participants were sent a follow-up email with a link to the posttraining survey, identical to the pretraining survey. Reminder emails were sent, and flyers were placed in administrative mailboxes to encourage participation.

Statistical Analysis: Descriptive statistics were calculated for each survey item. Differences in response distributions before and after training were analyzed using chi-square tests. If a response category contained no pretraining or posttraining responses, it was excluded from the analysis. In cases where no posttraining responses were recorded in a specific category, the corresponding pretraining responses were combined with the adjacent category for analysis. To account for multiple hypothesis testing, the Bonferroni correction was applied to control for the family-wise error rate.

RESULTS

Participant Characteristics: A total of 50 individuals participated in the study, comprising 30 family medicine residents (60%) and 20 faculty members (40%). The survey response rate was 90% (45/50) for the pretraining survey and 88% (44/50) for the posttraining survey.

improvement in participants' engagement in smoking cessation counseling. The proportion of participants who regularly asked patients about tobacco use increased from 62.2% pretraining to 86.4% posttraining ($p = 0.02$). Similarly, those who assisted patients with smoking cessation plans increased from 40% to 75% ($p = 0.01$).

Changes in Smoking Cessation Counseling Practices:

Following the training program, there was a notable

Table 1: Frequency of Smoking Cessation Counseling Practices Before and After Training.

Counseling Practice	Pretraining % (n=45)	Posttraining % (n=44)	p-value
Ask about tobacco use	62.2% (28)	86.4% (38)	0.02*
Advise quitting	68.9% (31)	90.9% (40)	0.03*
Assess readiness to quit	51.1% (23)	81.8% (36)	0.01*
Assist with cessation plan	40.0% (18)	75.0% (33)	0.01*
Arrange follow-up	35.6% (16)	68.2% (30)	0.01*

*Statistically significant at $p < 0.05$

Confidence in Using Motivational Interviewing Techniques: Participants' self-reported confidence in using motivational interviewing (MI) techniques also showed substantial improvement posttraining.

Confidence in rolling with resistance increased from 35.6% to 72.7% ($p = 0.004$), and confidence in using open-ended questions (OARS technique) rose from 44.4% to 81.8% ($p = 0.007$).

Table 2: Participants' Confidence in Motivational Interviewing Techniques Before and After Training.

Motivational Interviewing Skill	Pretraining % (n=45)	Posttraining % (n=44)	p-value
Rolling with resistance	35.6% (16)	72.7% (32)	0.004*
Expressing empathy	42.2% (19)	79.5% (35)	0.005*
Developing discrepancy	38.9% (17)	75.0% (33)	0.006*
Supporting self-efficacy	40.0% (18)	77.3% (34)	0.006*
Using OARS technique	44.4% (20)	81.8% (36)	0.007*

*Statistically significant at $p < 0.05$

Use of Pharmacotherapy for Smoking Cessation: The training also impacted participants' willingness to recommend pharmacologic therapies for smoking cessation. Those who regularly prescribed nicotine

replacement therapy (NRT) increased from 51.1% to 84.1% ($p = 0.008$), and willingness to prescribe varenicline rose from 26.7% to 63.6% ($p = 0.01$).

Table 3: Use of Pharmacotherapy for Smoking Cessation Before and After Training.

Pharmacotherapy Use	Pretraining % (n=45)	Posttraining % (n=44)	p-value
Prescribe NRT	51.1% (23)	84.1% (37)	0.008*
Prescribe bupropion	35.6% (16)	68.2% (30)	0.01*
Prescribe varenicline	26.7% (12)	63.6% (28)	0.01*
Discuss combination therapy	31.1% (14)	70.5% (31)	0.009*

*Statistically significant at $p < 0.05$

Participant Feedback on Training Program: After completing the posttraining survey, 90.9% (40/44) of participants reported that the training significantly enhanced their ability to counsel patients on smoking

cessation. The majority found the motivational interviewing techniques and pharmacotherapy education to be the most useful components of the program.

Table 4: Participant Perception of Training Effectiveness.

Training Component	Very Helpful % (n=44)	Somewhat Helpful % (n=44)	Not Helpful % (n=44)
Motivational interviewing techniques	81.8% (36)	15.9% (7)	2.3% (1)
Pharmacotherapy education	77.3% (34)	18.2% (8)	4.5% (2)
Smoking cessation guidelines	72.7% (32)	20.5% (9)	6.8% (3)
Use of quit-line resources	65.9% (29)	27.3% (12)	6.8% (3)

DISCUSSION

The Smoking Cessation Training Program demonstrated an increase in awareness and confidence among healthcare providers in utilizing clinical practice guidelines to assist patients with smoking cessation. The training incorporated didactic sessions and printed educational materials, a commonly used intervention to influence practice behaviors. Previous systematic reviews have shown that printed educational materials can improve process outcomes, such as prescribing patterns and smoking-cessation activities, compared to no intervention. However, these materials alone may not directly impact patient outcomes.^[19]

Comprehensive smoking cessation education should extend beyond printed materials to include interactive and evidence-based teaching methods. Best-practice guidelines recommend a combination of multiple media formats, instructional techniques, and repeated exposures to maximize learning effectiveness.^[20] Our program integrated various teaching strategies, including lectures, role-playing, group discussions, and reflective exercises, to enhance participants' engagement and skill development.

Despite the structured and multifaceted nature of the program, certain aspects of smoking cessation care did not improve significantly, indicating the need for further educational enhancements. Future research should explore innovative teaching methodologies, such as real-time patient case discussions, video-based learning with expert feedback, and formal participation in structured smoking-cessation programs within residency curricula. Retrospective chart reviews with feedback on patient care practices may also help reinforce behavioral changes. Additionally, continuous exposure to smoking-cessation interventions may gradually shift the clinical culture, potentially leading to improved patient counseling and cessation success rates in future evaluations.

The cost associated with implementing a smoking cessation training program is relatively minimal, primarily covering printed materials and instructional time. Many educational resources are available at little to no cost through local or national health organizations. In academic settings, training sessions can be integrated into routine faculty activities, further reducing additional costs. However, further research is necessary to assess the long-term cost-effectiveness of such programs.

This study has certain limitations. First, the sample size may not have been large enough to detect statistically significant differences in some survey responses. Second, while the survey instrument used in this study was adapted from a previously validated tool, modifications were made to tailor it to the study's objectives. These included omitting questions related to outdated technological tools and simplifying the Likert scale from

a seven-point to a four-point range to improve clarity and consistency in participant responses.^[21]

In conclusion, this study highlights the effectiveness of a structured smoking cessation training program in improving healthcare providers' familiarity and confidence in smoking cessation counseling. The program presents a feasible and reproducible educational model that can be integrated into clinical training. However, additional research is required to assess the long-term impact on provider behaviors, patient outcomes, and the cost-effectiveness of such interventions. Further advancements in educational strategies should be explored to optimize smoking cessation training and enhance clinical practice.

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