Brief Report

Tobacco cessation via doctors of chiropractic: Results of a feasibility study

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Abstract

Introduction: There is a sizeable and growing body of empirical literature on the effects of physician advice to quit smoking. Because of the association between tobacco use and the health problems that may provoke referral to chiropractic care, doctors of chiropractic (DCs) may be able to give patients personalized proximal health feedback that may motivate them to quit. However, DCs have not been utilized in this role. The primary aim of this study was to design and refine a brief office-based tobacco intervention for use within chiropractic settings.

Methods: This study was conducted in 20 private chiropractic practices in 2 phases: (a) intervention development, in which we created and focus tested practitioner and patient materials, and (b) feasibility, in which we evaluated the impact of the intervention on 210 tobacco-using chiropractic patients.

Results: Analyses were conducted on 156 patients who exclusively smoked cigarettes. Using an intent-to-treat approach, assuming all nonresponders to be smokers, 13 (8.3%) reported 7-day abstinence at 6 weeks, 22 (14.1%) at the 6-month follow-up, and 35 (22.4%) at the 12-month assessment. Eleven participants (7.1%) reported prolonged abstinence at the 6-month follow-up, and 15 (9.6%) reported prolonged abstinence at 12 months.

Conclusions: To our knowledge, this is the first study to refine a brief office-based treatment for tobacco dependence for use in chiropractic settings. The results of this study were promising and will lead to a randomized clinical trial. If found to be effective, this model could be disseminated to chiropractic practitioners throughout the United States.

Introduction

The hazards associated with cigarette smoking have been well documented. Cigarette smoking is the single leading preventable cause of premature death in the United States (Centers for Disease Control and Prevention, 2008). In addition to the relationship of cigarette smoking to a variety of cancers, coronary conditions, and chronic obstructive pulmonary disease, cigarette smokers are also more likely to experience sciatica, herni-

ated discs, and nonspecific low back pain (Boshuizen, Verbeek, Broersen, & Ween, 1993; Deyo & Bass, 1989; Goldberg, Scott, & Mayo, 2000; Scott, Goldberg, Mayo, Stock, & Poitras 1999; Vogt, Hanscom, Lauerma, & Kang, 2002).

There is a sizeable and growing body of empirical literature on the effects of health care practitioner advice to quit smoking (Fiore et al., 2008; Stead, Bergson, & Lancaster, 2008). Chiropractic is a health care profession that focuses on disorders of the musculoskeletal system and the nervous system and the effects of these disorders on general health (American Chiropractic Association). Chiropractic care is used most often to treat neuromusculoskeletal complaints, including but not limited to backpain, neck pain, pain in the joints of the arms or legs, and headaches. Doctors of chiropractic (DCs; often referred to as chiropractors or chiropractic physicians) practice a hands-on approach to health care that includes patient examination, diagnosis, and treatment. Chiropractors have broad diagnostic skills and are also trained to recommend therapeutic and rehabilitative exercises, as well as to provide nutritional, dietary, and lifestyle counseling (American Chiropractic Association). In 2006, there were approximately 53,000 DCs in the United States, and this figure is expected to grow by 14% over the next 10 years (Bureau of Labor Statistics).

There have been substantial recent increases in the use of complementary and alternative care. Among those seeking health care for “back problems,” 59% consult both allopathic and non-physician clinicians (Druss, Marcus, Olsson, Tanielian, & Pincus, 2003). Tobacco use is a risk factor for chronic back pain (Scott et al., 1999), and on an annual basis, DCs see more than 30% of all patients who present with a primary complaint of back pain (Meeker & Haldeman, 2002). Because of the association between tobacco use and the health problems that may provoke referral to chiropractic care, DCs may be able to give patients personalized proximal health feedback that may motivate them to quit. However, DCs have not been utilized in this role (Gordon, Istvan, & Haas, 2005; Hawk, Long, Perillo, & Boulanger, 2004). Though DCs can provide a unique channel for the conduct of tobacco interventions, they currently receive little or no training in these techniques (Gordon et al., 2005; Hawk & Evans, 2005).

The primary aim of this study was to design and refine a brief office-based tobacco intervention based on the *Clinical Practice*

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Guideline: Treating Tobacco Use and Dependence (Fiore et al., 2000) for use within chiropractic settings. First, we adapted the intervention protocol, training, and patient materials through the use of focus groups, interviews, and written surveys with DCs, office staff, and chiropractic patients. Second, we developed and refined study protocols and procedure, including DC and patient recruitment, data collection, and follow-up, through an iterative process with participating practices and patients. Third, we evaluated the intervention in a feasibility study with 20 chiropractic clinics.

Methods

Study design

This study was conducted from May 2006 to January 2009 in 20 private chiropractic practices in Oregon in two phases: (a) intervention development, in which we created and focus tested practitioner and patient materials, and (b) feasibility, in which we evaluated the impact of the intervention on tobacco-using chiropractic patients and DCs.

During Phase 1, we adapted an allopathic tobacco cessation intervention for use in a chiropractic setting. The materials included a practitioner training program, practitioner reference guides, treatment and follow-up plans, patient recruitment posters, and patient self-help guides. Practitioners were recruited to participate in three 2-hr iterative focus groups. All practitioners were assessed prior to participation in the focus groups.

During Phase 2, we recruited 210 tobacco-using chiropractic patients. We assessed practitioners at baseline and 6 months postenrollment and patient outcomes at 6 weeks, 6 months, and 12 months postenrollment. Our primary endpoint was prolonged abstinence among patients at the 12-month assessment.

Intervention development

We conducted preliminary focus groups to determine the level of knowledge about tobacco use and cessation treatment held by DCs and their staff. In addition, we discussed types of materials needed by both practitioners and patients and resources necessary for continued maintenance of tobacco dependence treatment by DCs over time. As a result of these efforts, we created the *Wellness Intervention for Smokers' Health* program, which featured positive health information, bright graphics, affective motivational messages, and content tailored to the chiropractic setting. We created a 3-hr workshop, practitioner booklets, posters, reference guides, and patient materials. The workshop outline and all materials were then tested in a second series of focus groups and refined. A final set of focus groups helped to shape the final products to be used in the feasibility study.

Participant recruitment

Practitioners

We recruited a total of 20 chiropractic practices, comprising 22 DCs and 17 chiropractic assistants (CAs) from Eugene, Salem, Albany, and Corvallis, Oregon. Recruitment of practices was easier than anticipated, as DCs were enthusiastic about participating in a tobacco cessation study. We initially approached 32 practices in Lane County (Eugene/Springfield), Oregon. Out of those, we had little difficulty recruiting 10 (31.3%) practices to participate in Phase 1. All those practices were invited to con-

tinue with Phase 2 of the study. Two practices chose not to continue, one due to low patient volume and the other for personal reasons. We easily replaced those two practices through participating DCs' recommendations. In addition, we approached 45 practices in Linn and Benton Counties (Salem, Albany, and Corvallis), Oregon. Of those, we recruited 10 (22.2%) practices in a 3-month period.

Patients

Patient participants consisted of adult tobacco-using patients, aged 18 years or older, presenting for treatment at participating chiropractic practices. Enrollment of patients occurred over a 3- to 4-month period of time in each practice. We recruited 210 patients at baseline. After enrollment, 8 enrollees were found to be ineligible and 1 declined to participate, leaving a sample of 201. The most common reasons for ineligibility were not being a patient at the clinic, not being at the clinic for a chiropractic visit, and being <18 years of age.

Participant retention

Practitioners

All DCs and staff members who agreed to participate in Phase 1 of the study attended every focus group meeting and actively participated in the intervention and materials development process. During Phase 2, all practitioners and staff members attended the 3-hr workshop and subsequent 1-hr follow-up booster/feedback sessions.

Patients

Of the 201 eligible patients assessed at baseline, follow-up assessments were completed with 187 (93.0%) at 6 weeks, 173 (86.1%) at 6 months, and 155 (77.1%) at 12 months.

Assessments

Practitioners

Practitioners were assessed at baseline, 3 and 12 months postenrollment, for current levels of intervention-related behaviors (e.g., routinely asking about patients' tobacco use), attitudes (e.g., it is appropriate for DCs to advise smokers to quit), and perceived barriers to incorporating tobacco cessation into routine care (e.g., lack of time). A factor analysis resulted in three scales: behaviors (nine items; $\alpha = .71$), attitudes (four items; $\alpha = .83$), and barriers (seven items; $\alpha = .74$).

Patients

Patients were assessed at baseline, 6 weeks, 6 months, and 12 months postenrollment. Consents and baseline assessments were collected via paper forms in each participating practice. Follow-up assessments were conducted via telephone. Our original design included only a 6-week and 6-month assessment. However, because our sample size was smaller than anticipated, we added a 12-month assessment to obtain additional information on our sample for a longer period of time. The additional assessment also allowed us to informally compare quit rates from our chiropractic sample with those obtained in previous studies conducted with patients from other types of health care settings (e.g., dental, primary care, etc.).

Point prevalence of tobacco use was measured by the questions, "Have you smoked, even a puff, in the last 7 days?" and "Have you used smokeless tobacco, even one dip, in the last 7 days?" and prolonged abstinence was measured as no tobacco use since the prior assessment. Self-reported abstinence was not biochemically verified due to the public health nature of this trial. Participants were also asked about their receipt of intervention components, health status, and use of allopathic and complementary/alternative medical services. Our primary outcome was prolonged abstinence (no tobacco use for at least 9 months) reported at the 12-month assessment.

Results

Patient demographics

Patients were predominantly White (89.2%), female (62.3%), married (53.3%), and an average of 42 years old ($SD = 13.8$). The vast majority had at least a high school education (91.0%) but had an annual income of less than \$40,000 (63.9%). Patients reported an average of 3.8 visits ($SD = 1.7$) to a chiropractor and 3.5 visits ($SD = 1.6$) to an allopathic provider in the previous year.

Patient tobacco use

Of the 201 subjects in the sample, 156 (78.7%) were exclusively cigarette smokers, 13 (6.5%) were exclusively tobacco chewers, and 29 (14.6%) used more than one form of tobacco. Based on the number of unique patient visits during the enrollment period, the number of enrolled tobacco users and the number of tobacco-using patients who declined to participate, we estimated a tobacco use prevalence rate of only 7% among participating chiropractic practices. Participants reported having smoked for an average of 21.2 years ($SD = 14.3$), and 60.1% reported that they used tobacco less than 30 min after waking each morning. Patients reported high levels of readiness to quit (average = 7.7 on a scale of 0–10, with 10 being the highest; $SD = 2.5$).

Primary outcome analyses

Outcome analyses were conducted for exclusive smokers, as the number of smokeless tobacco users and users of multiple products were too small to obtain meaningful results. For these data, we used an imputation method, which estimates missing values using an iterative process (Little & Rubin, 1987). There were 156 participants who exclusively smoked cigarettes. Using a conservative intent-to-treat approach, assuming all nonresponders to be continued smokers, 13 (8.3%) reported 7-day abstinence at 6 weeks, 22 (14.1%) at the 6-month follow-up, and 35 (22.4%) at the 12-month assessment. Eleven participants (7.1%) reported prolonged abstinence at the 6-month follow-up, and 15 (9.6%) reported prolonged abstinence at 12 months. Of the 115 who provided complete data at all three follow-up assessments, 11.3% reported 7-day abstinence at 6 weeks, 19.1% at the 6-month follow-up, and 30.4% at the 12-month assessment. Almost 10% (9.6%) of participants reported prolonged abstinence on the 6-month assessment, and 13.0% reported prolonged abstinence at 12 months. Results of these analyses are presented in Table 1.

Secondary outcomes

For those smokers not abstinent at 12 months, the number of annual quit attempts increased from a mean of 1.18 during the year prior to the intervention to 2.22 during the intervention year, $t(88) = 5.40$, $p < .001$.

Table 1. Self-reported quit rates for smokers

	Intent to treat ($n = 156$), %	Complete case ($n = 115$), %
Point prevalence		
6 Weeks	8.3	11.3
6 Months	14.1	19.1
12 Months	22.4	30.4
Prolonged abstinence		
6 Months	7.1	9.6
12 Months	9.6	13.0

Receipt of intervention components

To assess for practitioner implementation of the intervention behaviors, we asked patients to report receipt of intervention components at their chiropractic visit on the 6-week follow-up assessment. As depicted in Table 2, a majority of patients (78.6%) reported that their DC had talked with them about quitting tobacco. Specifically, patients reported that DCs were most likely to discuss tobacco-related health problems (60.4%), tips for quitting (57.8%), setting a quit date (54.0%), nicotine replacement products (43.9%), and natural methods for quitting (40.6%). A small proportion of patients (25.7%) reported that DCs discussed prescription medications for quitting. The vast majority (72.2%) of patients were given written materials about tobacco use.

Participants were also asked to rate the helpfulness of both the assistance and materials they received from their chiropractor. Of those patients receiving some form of assistance ($n = 149$), 71.8% reported that they found this assistance to be very helpful. Most (82.2%) of the 118 patients who were given written materials reported that they read at least parts of the materials (31.9% read all the materials), and 53.3% stated that those materials were very helpful.

Practitioner behaviors, attitudes, and perceived barriers

The effect of the training and participation in the program on practitioners' tobacco cessation-related behaviors, attitudes, and barriers was assessed by self-report at the 6-month follow-up. Results indicated that practitioners increased their tobacco treatment behaviors, $t(20) = 8.79$, $p < .001$, had more positive attitudes, $t(20) = 2.37$, $p < .05$, and perceived fewer barriers to providing tobacco cessation treatment, $t(20) = -3.27$, $p < .01$, as a result of receiving training.

Table 2. Self-reported receipt of intervention components ($n = 187$)

At your visit 6 weeks ago, did your chiropractor	Yes (%)
Discuss tobacco-related health problems	60.4
Discuss setting a quit date	54.0
Discuss tips for quitting	57.8
Discuss nicotine replacement therapy (e.g., nicotine gum, patch, lozenge)	43.9
Discuss pharmacotherapy for tobacco cessation (e.g., Zyban, Chantix, nicotine nasal spray)	25.7
Discuss natural methods of quitting (e.g., acupuncture, hypnosis, herbal supplements)	40.6
Give you written materials about tobacco use	72.2

Discussion

DCs were eager to participate in the study and enthusiastic about the intervention protocol and materials. The study was feasible, although recruiting patients was challenging due to the low prevalence of tobacco use and the repeated visits made by individual patients. Absolute cessation rates were superior to other brief allopathic health care–based interventions (Carr & Ebbert, 2006; Gordon, Lichtenstein, Severson, & Andrews, 2006; Stead et al., 2008). Participating in the training significantly increased practitioners' tobacco cessation-related behaviors, and implementation of the protocol by practitioners appeared to be good. In addition, as a result of participating in the cessation program, practitioners' attitudes regarding the appropriateness of providing tobacco treatment in chiropractic settings became more positive and perceived barriers were reduced.

To our knowledge, this is the first study to refine an empirically validated brief office-based treatment for tobacco dependence for use in chiropractic settings. The results of this study were promising and will lead to a randomized clinical trial in the future. If found to be effective, this intervention model could be disseminated to chiropractic practitioners throughout the United States.

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Declaration of Interests

None declared.

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