Evaluating Initial Reach and Robustness of a Practical Randomized Trial of Smoking Reduction

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Objective: This study evaluated the reach, initial effectiveness, and potential moderators and mediators of results of a smoking reduction program. Design: A generally representative sample of 320 adult smokers from an HMO, scheduled for outpatient surgery or a diagnostic procedure, were randomized to enhanced usual care or a theory-based smoking reduction intervention that combined telephone counseling and tailored newsletters. Main Outcome Measures: Self-reported number of cigarettes smoked and carbon monoxide levels. Results: The intervention enrolled 30% of known eligible smokers and produced reductions of 3 cigarettes per day greater than enhanced usual care. Intervention participants were significantly more likely than control participants to achieve at least a 50% reduction in self-reported number of cigarettes using complete cases, imputation analyses, and intent-to-treat procedures. Similar patterns were seen for carbon monoxide results but were significant only in complete case analyses. The intervention was generally robust across patient characteristics (e.g., education, ethnicity, health literacy, and dependence) and phone counselors. Conclusion: Initial results suggest that this program has potential to reach and assist smokers who may not participate in cessation programs. Additional research is indicated to enhance intervention effects, assess maintenance, and evaluate public health impact.

Keywords: smoking reduction, mediators, randomized controlled trial, RE-AIM

Despite the considerable progress that has been made in reducing smoking prevalence in the United States, there has been a plateau in terms of national smoking rates (Centers for Disease Control & Prevention, 2005; National Center for Chronic Disease Prevention & Health Promotion, 2006). Although the majority of current smokers say they want to quit, most decline to participate when offered smoking cessation assistance, and only about 5% of those who attempt to quit in a given year do so successfully (National Center for Chronic Disease Prevention & Health Promotion, 2006). As a result, there has been recent interest in smoking reduction (Carpenter, Hughes, Solomon, & Callas, 2004; Hughes, 2000; Rodu & Godshall, 2006), stimulated not only by the plateau in cessation rates, but also by data indicating that smoking reduction likely increases long-term cessation rates (Carpenter et al., 2004; Hughes, 2000; Hughes & Carpenter, 2006; Hughes, Cummings, & Hyland, 1999). Although data are mixed and inconclusive, smoking reduction may produce sustained reductions in tobacco exposure biomarkers (Glasgow, Morray, & Lichtenstein, 1989; Hughes, Callas, & Peters, 2007).

Despite the potential of smoking reduction interventions, to our knowledge no previous study has integrated a behavioral smoking reduction intervention into health care organizational or “real-world” smoking programs (Hughes & Carpenter, 2006). Pawson, Greenhalgh, Harvey, and Walshe (2005) have suggested that it is important to further health research by “discerning what works, for whom, in what circumstances, in what respects, and how” (p. S1:32). To provide the information identified by Pawson et al., practical clinical trials are needed that have more “transparency” in reporting of results (Des Jarlais et al., 2004; Tunis, Stryer, & Clancy, 2003) and assess the potential mechanisms and moderators of effectiveness in typical intervention delivery settings (Glasgow, Davidson, Dobkin, Ockene, & Spring, 2006; Glasgow, Magid, Beck, Ritzwoller, & Estabrooks, 2005). Key characteristics of practical trials are that they are conducted with heterogeneous patients, are conducted in multiple settings (in our case, across many different clinics and specialty areas), use multiple outcomes important to decision makers, and use standard or
alternative treatments as comparison conditions (Glasgow, Magid, et al., 2005; Tunis et al., 2003). Such trials can also increase understanding of the external validity of health promotion interventions by documenting the reach of interventions—that is, the percentage of eligible persons who will participate in a given program and how representative they are of the target population (Glasgow, France, et al., 2006; Glasgow, Lichtenstein, & Marcus, 2003).

Our research group has recently developed a smoking reduction intervention that was designed to be broadly applicable and is integrated into other smoking modification options in a large managed care organization (Glasgow, France, et al., 2006). The focus of the program is on behavioral approaches to reduce the number of cigarettes smoked, not on the use of alternative tobacco products (Shiffman et al., 2002). A social–ecological theoretical approach described in detail elsewhere (Glasgow, France, et al., 2006), including risk perceptions, self-efficacy, problem solving, and environmental support, was used for intervention development. Nicotine replacement therapy was not used as part of the intervention because it had not been approved for use for smoking reduction (vs. cessation) in the United States.

Of late, social–ecological theories of human behavior have become popular bases for intervention development (Glasgow, Strycker, Toobert, & Eakin, 2000; Sorensen, Barbeau, Hunt, & Emmons, 2004; Spence & Lee, 2003). The primary assumption of a social–ecological model is that the interaction between the environment and an individual is the primary determinant of behavior (Bandura, 1997; McLeroy, Bibeau, Streckler, & Glanz, 1988). Figure 1 depicts the simplified social–ecological intervention logic model used in this study. Briefly, personal psychosocial (e.g., self-efficacy beliefs), physical (e.g., gender), and behavioral (e.g., number of cigarettes smoked) factors are all important determinants of future behavior. Personal determinants are embedded within an environmental context that will either facilitate or impede behavior change. Each environment—whether home, work, or some other place (e.g., church or nightclub)—can generally be separated into physical and social structures. Physical structure could include the presence of a designated smoking area or availability of ashtrays. Social structure includes group norms for smoking, work policies for smoking breaks, and supportive family members. Our study used this social–ecological structure to direct intervention strategies toward personal and environmental factors while identifying potential moderators and mediators that may affect intervention success (see Figure 1).

The unique context of the study is that smokers scheduled for outpatient surgery or an invasive medical procedure (e.g., colonoscopy) were approached before their operation or procedure. There has been a large amount of research on smoking cessation among hospitalized and primary care patients. However, there has been no such research on outpatient surgery settings or on smoking reduction provided at such a “teachable moment” (Cole-Kelly, 2006; McBride, Emmons, & Lipkus, 2003), and there are an increasing number of such outpatient and day surgeries scheduled.

Figure 1. Logic model of proposed intervention effects, mediators, and moderators. R = randomized; CO = carbon monoxide.
The purposes of the present study were fourfold: (a) to evaluate the reach of a smoking reduction program offered in conjunction with other smoking services of a large HMO; we hypothesized that a large percentage of smokers who are unwilling to attempt cessation would attempt reduction; (b) to determine the initial (3-month) effectiveness of the program relative to an enhanced usual-care condition in a practical, randomized controlled trial (Glasgow, Magid, et al., 2005); we hypothesized that those randomized to the smoking reduction intervention would show greater reduction in cigarettes per day and carbon monoxide levels than those in usual care and that a larger percentage of intervention participants would achieve 50% reduction or more; (c) to assess the robustness of the program (moderator effects) across patient characteristics and intervention staff; we hypothesized that intervention effects would be robust across potential moderator variables; and (d) finally, a secondary aim, to determine the mechanisms of intervention effectiveness by evaluating potential theoretical mediators of treatment outcomes; we hypothesized that self-efficacy, number of problem-solving techniques used, risk perception, and level of social–environmental support would mediate treatment outcomes.

Method

Recruitment

This study was conducted in the Kaiser Permanente Colorado (KPCO) health care system and received institutional review board approval. Participants were recruited from KPCO smokers about to undergo outpatient surgery, a gastrointestinal procedure (such as a colonoscopy or sigmoidoscopy), or a screening/diagnostic procedure (mammogram or pulmonary lung function test). KPCO’s electronic medical records system was used to identify all current smokers, ages 18 and older, scheduled for one of the procedures above. These 2,234 individuals were notified about the program by a personalized introductory letter from KPCO’s chief of preventive medicine. A descriptive flyer was included to provide additional details about the study. An informed consent form and Health Insurance Portability and Accountability Act (HIPAA) statement were included with the introductory letter, flyer, and an “opt-out” postcard. Smokers who did not wish to be contacted could decline by returning the postcard. One to two weeks after receiving the letter, participants who did not decline via postcard were contacted by trained telephone interviewers from the AMC Cancer Research Center on behalf of the KPCO Preventive Medicine Department. After smoking status, interest, and eligibility criteria were confirmed, potential participants received a detailed description of the study.

Patients were excluded if they (a) smoked fewer than 10 cigarettes per day, (b) could not read or understand English, (c) canceled or postponed the medical procedure, or (d) were unavailable for the study duration. The medical procedure for each participant was used as a motivational opportunity to make changes in their smoking habits. Participants were told that the study involved receiving phone calls and personalized mailed materials to help them to reduce the number of cigarettes smoked. The phone interviewer then asked whether the participant was interested in quitting or cutting down or not interested in working on his or her smoking at that time. Patients who smoked fewer than 10 cigarettes per day or who had difficulty deciding between quitting or cutting down were referred to their choice of several health plan and state quit line cessation options. An attempt was made to collect demographic and smoking history information on all those contacted to assess the representativeness of participants.

Patients who agreed to participate in the research study completed an informed consent procedure and HIPAA authorization. Baseline survey assessments were completed before randomization using a computer-assisted telephone interview, after which participants were randomly assigned to intervention conditions using a computer algorithm developed by the project statistician. Participants then came in for a brief in-person visit with KPCO research staff (different than intervention staff) to provide baseline samples for the biochemical outcomes. Those randomized to intervention began the first phone counseling session immediately. Recruitment took place between November 2004 and April 2006. Follow-up assessments were completed between February 2005 and September 2006.

Intervention

Intervention delivery. The intervention was delivered across a 6-month time period and consisted of four telephone counseling sessions, four tailored newsletters, and one targeted newsletter. Three phone calls and three tailored letters were scheduled to be delivered by the 3-month follow-up, as shown in Figure 2. Tailored intervention components produced individual messages based on a combination of smoking rate, type of procedure, gender, level of success, and self-efficacy. Targeted newsletters addressed issues common to smokers having had recent medical procedures and attempting to reduce their smoking. The intervention components were sequenced and gradually faded over time as depicted in Figure 2. The 3- and 12-month assessments were conducted via self-administered questionnaire. (Twelve-month data will be reported separately when available.) This article concerns the 3-month results, the program reach, and the mediator–moderator results.

Each counseling call used strategies to heighten participant self-efficacy to achieve and sustain reduced smoking levels. An assessment, goal setting, and barriers identification and resolution protocol was used to help participants improve confidence in their ability to reduce the number of cigarettes they smoked. Participants were encouraged to set an initial goal of a one third reduction in number of cigarettes smoked. On the basis of progress and self-efficacy, participants’ later reduction goals were individually tailored, but we attempted to have most attempt at least a 50% reduction as recommended by Windsor (1999). This level was selected a priori as a clinically significant measure of reduction (Jacobson & Truax, 1998). Those successful in achieving a 50% or more reduction were then encouraged to consider cessation. Newsletters included specific tailoring based on data collected during the preceding telephone counseling call and included content targeted to personal and environmental factors.

The reduction program consisted entirely of tailored behavioral and environmental change strategies. The telephone calls were tailored concurrently as participant data were collected, to respond appropriately to the individual’s progress toward his or her reduction goals. Each newsletter that followed a counseling call was then tailored on the basis of the new information obtained from that call.
Recruitment call, baseline assessment, and 1st counseling session (1-2 weeks prior to procedure date)

Baseline biochemical measures (completed prior to procedure date)

1st tailored newsletter (5-7 days post baseline call)

1st follow up telephone call (2-3 days post procedure date)

2nd tailored newsletter (1 week post 1st follow up call)

2nd follow up telephone call (1 week post 2nd newsletter)

3rd tailored newsletter (5 weeks post 2nd follow up call)

3 month assessment – pen and paper assessment + biochemical measures

Figure 2. Timeline: Delivery of intervention components.
Phone protocol and interviewers. The four interviewers who conducted the counseling calls included both genders; three were college students in their early 20s, and one was a high school graduate age 55. None had previous training or experience in psychosocial or smoking counseling. Interviewer training began with an overview of the project, followed by a specific training session focusing on the recruitment/baseline call. Additional training sessions were conducted for each counseling call. The call-specific training sessions lasted 2 half-days and included question-by-question analysis, independent review time followed by a group question-and-answer period, and supervised role-playing exercises. Supplementary training sessions were conducted in addition to the call-specific trainings to strengthen interviewer skills for building rapport and helping participants. Throughout the study, supervisory staff frequently monitored live calls and provided real-time feedback for quality control and improvement. When not conducting calls, interviewers were encouraged to independently practice scenarios they had not recently encountered, review computer-assisted telephone interview call content, and practice call scenarios using their own language.

Newsletters. As shown in Figure 2, newsletters were gradually faded over time and were sent after each phone call. Each newsletter included a regular column by KPCO’s chief of preventive medicine and a narrative story that addressed vicarious learning through the use of a like model (i.e., tailored on gender and level of participant success) experiencing the intervention. The theoretical mediators were addressed throughout the content of the five newsletters, the first four of which were individually tailored and the last of which was targeted (Kreuter, Farrell, Olevitch, & Brennan, 2000). Content focused on increasing self-efficacy, identifying benefits and barriers to reduction, perceived risk or threat of smoking, and relapse prevention. In addition, the newsletters included generic content on other aspects of the social–ecological model such as tips for handling stress, preventing weight gain, and rearranging one’s social environment.

Enhanced usual care condition. Individuals randomized to the “usual care” condition participated in the recruitment/baseline call. Then three quarterly generic health education mailings about a variety of health promotion topics and generic behavior change tips were sent out on the same newsletter mailing schedule as the first, third, and fifth newsletters for the intervention arm of the study. Usual care participants also participated in the same assessments as the intervention participants, including the carbon monoxide sample collections. On completion of the study, all individuals in the usual care arm received “end-of-study newsletters,” which were three targeted reduction newsletters containing the same articles provided in the intervention newsletters.

Measures

Outcomes. Both self-report and biochemical measures of smoking were collected at baseline and 3-month assessments by assessment staff separate from intervention staff phone callers. The self-report measure asked participants separately about the number of cigarettes smoked on (a) workdays and (b) nonworkdays the prior week. A composite self-report measure of cigarettes per day was calculated on the basis of a weighted average [(5 × week day rate) + (2 × weekend rate)/7].

Carbon monoxide (CO) in expired breath samples was assessed using a Vitalograph CO monitor (Vitalograph Inc., Lenexa, KS).

Demographic and moderator variables. Potential background and moderator variables included age, gender, number of chronic illnesses, ethnicity, education, income, years smoked, cigarettes per day, presence of other smokers in the home, whether the patient’s physician had recommended quitting, whether cigarettes were purchased by the carton (vs. smaller quantities), and some psychosocial variables. Because of the priority on feasibility and reducing respondent burden, brief versions of all psychosocial measures were used. Psychosocial variables included depressive symptoms as assessed by the two questions endorsed by the Kaiser Permanente Care Management Institute National Depression Guideline (sensitivity = 96%, specificity = 57%). Health literacy was assessed by the three-item health literacy scale of Chew, Bradley, and Boyko (2004), and nicotine dependency was assessed by five items from the Wisconsin Assay of Relapse and Dependence (Piper et al., 2004). These items assessed smoking after waking up, most friends smoke, most family smoke, urges upon awakening, and cigarettes per day. Finally, support from family and friends was assessed via a single item asking participants to rate the amount of support received for smoking reduction on a 5-point scale.

Hypothesized mediating variables. As illustrated in Figure 1, we hypothesized that the smoking reduction intervention would achieve its outcomes through changes in four proposed mediating variables. Self-efficacy for smoking reduction was assessed via two measures: a 100-point rating scale of confidence that the participants could reduce their number of cigarettes smoked by two thirds (à la Bandura, 1997) and the average of 20 items from the situational efficacy scale of Condieotte and Lichtenstein (1981). Risk perception was assessed by a single item that asked participants to rate how much risk they personally faced by smoking 20 cigarettes per day. Use of reduction strategies was a composite measure of the number of seven possible strategies that participants reported having used at the 3-month assessment. Finally, social–environmental support was assessed by means of a 6-point rating scale that asked participants, “During the past 3 months, when you were trying to reduce the number of cigarettes you smoke, which of the following best describes the amount of support or resistance you received from family, friends, and coworkers?”

Analyses. We conducted descriptive analyses to evaluate distributions and to evaluate reach and attrition. Repeated measures analyses were used to evaluate intervention effects and improvement from baseline to the 3-month follow-up on self-reported and biochemical measures of smoking and on hypothesized mediating variables. In addition to complete-case and intent-to-treat analyses, we obtained a third set of estimates through multiple imputation (five multiples) of missing values using multivariate sequential regression (IVEWare, University of Michigan; Raghunathan, Lepkowski, Van Hoewyk, & Solenberger, 2001). The method assumes item-missing values are missing at random (Rubin, 1976). Imputed values for each individual are conditioned on observed values for that individual.

We conducted multiple regression analyses to identify moderator variables (using interaction terms) that altered the impact of intervention on number of cigarettes and CO levels. Following the recommendations of Windsor et al. (1999), we adopted an a priori
criterion for clinical significance of achieving a reduction of at least 50% of baseline level and conducted analyses of the percent-
age of participants in each condition achieving this magnitude or greater reduction on (a) self-reported cigarettes and (b) CO. A two-tailed alpha level of .05 was adopted for significance.

Results

Reach

As can be seen in Figure 3, a total of 391 participants (36.8% of the smokers confirmed as eligible) enrolled in the study. A more conservative estimate, which assumed that the same percentage of members who could not be contacted or who opted out before eligibility was determined were eligible as among those who completed eligibility determination (64%; see Figure 3 and Table 1), produced an enrollment rate of 30.1%. As can be seen, this was more than three times the percentage of smokers who opted for a cessation program (9.5% of known eligible smokers), despite a variety of cessation options being available and undecided smokers being encouraged to attempt cessation.

There was, however, considerable early attrition, and 71 of those smokers (36 intervention and 35 control smokers) who enrolled over the telephone never completed the baseline biochemical sample collection or participated any further. Counting only those who completed all baseline assessment activities as participants resulted in a participation rate of 30.1% of known eligible smokers (320 of 1,063) or 22.3% of all assumed eligible smokers (320 of 1,438).

Table 1 summarizes the characteristics of four groups of smokers: smoking reduction participants (n = 320), those who initially agreed but did not complete baseline (n = 71), those who declined to participate (n = 167–572; many did not provide data on some measures in Table 1), and those who chose to quit (n = 101). As can be seen, there were few differences among members of these self-selected groups. The majority of participants were more than 50 years old, were female, smoked approximately a pack a day, and had smoked for more than 30 years. The only significant difference was that Latinos were more likely to choose cessation over reduction or other options (p < .05).

Implementation

The intervention was consistently implemented. Records kept by project staff indicated that by the 3-month follow-up, 94% of intervention participants received two or more phone calls and 100% received all the newsletters.
Outcome Effects

There were no baseline differences between participants randomized to intervention versus control conditions, as can be seen in Table 2. As shown in Table 3, there were mixed results on the behavioral and biochemical outcomes. A chi-square analysis revealed that significantly more intervention than control participants achieved a 50% reduction in number of cigarettes per day (p = .008). Intent-to-treat analyses, assuming that those lost to follow-up did not achieve 50% reduction, revealed a similar pattern (15.9% vs. 7.7%, p < .05) and were significant. Finally, imputation analyses using missing-at-random assumptions were also significant (22.3% vs. 9.9%, p < .05).

Continuous repeated measures analyses of number of cigarettes smoked per day revealed a similar pattern, with intervention participants reporting reducing nonsignificantly more than control participants, who also reduced their smoking, but this difference was significant only in the complete cases analysis (p < .05).

Analyses of biochemical data revealed a similar pattern. Analyses of the percentage of participants who achieved at least a 50% reduction in CO levels were significant for the complete cases (chi-square, p < .05), but not for intent-to-treat or imputation analyses (although relative risks did favor intervention participants; relative risks = 1.9 and 2.4, respectively, ns). For the continuous CO measure, only the complete case analysis was significant. As can be seen in Table 3, in general the intervention condition produced larger reductions than the control condition, and these differences reached conventional significance levels in about half the analyses. Overall reductions were small to moderate.

Finally, there were no differences between conditions on quitting-related variables. Twenty-three percent of participants in each condition reported having attempted to quit by the 3-month follow-up, but few of those were successful. As would be expected, significantly more intervention participants (96%) than control participants (81%) reported attempting smoking reduction (p = .0005).

Table 3
Results by Condition on Reductions in Number Smoked and Biochemical Outcomes

<table>
<thead>
<tr>
<th>Variable/time</th>
<th>Intervention</th>
<th>Control</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mean no. cigarettes/day</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>21.1</td>
<td>14.8</td>
</tr>
<tr>
<td>3 months (complete)*</td>
<td>18.4</td>
<td>14.2</td>
</tr>
<tr>
<td>3 months (intent to treat)</td>
<td>17.2</td>
<td>9.6</td>
</tr>
<tr>
<td>3 months (imputed)</td>
<td>16.4</td>
<td>9.7</td>
</tr>
<tr>
<td>% greater than or equal to 50% reduction at 3 months</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete*</td>
<td>19.8</td>
<td>RR = 2.15</td>
</tr>
<tr>
<td>Intent to Treat*</td>
<td>15.9</td>
<td>RR = 2.06</td>
</tr>
<tr>
<td>Imputed*</td>
<td>22.3</td>
<td>RR = 2.25</td>
</tr>
<tr>
<td>Mean carbon monoxide</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Baseline</td>
<td>29.8</td>
<td>14.2</td>
</tr>
<tr>
<td>3 months (complete)*</td>
<td>22.5</td>
<td>12.3</td>
</tr>
<tr>
<td>3 months intent to treat</td>
<td>25.5</td>
<td>13.5</td>
</tr>
<tr>
<td>3 months (imputed)</td>
<td>21.0</td>
<td>11.5</td>
</tr>
<tr>
<td>% greater than or equal to 50% carbon monoxide reduction</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Complete cases*</td>
<td>20.0</td>
<td>RR = 3.45</td>
</tr>
<tr>
<td>3 months intent to treat</td>
<td>11.0</td>
<td>RR = 1.90</td>
</tr>
<tr>
<td>3 months imputed</td>
<td>22.7</td>
<td>RR = 2.40</td>
</tr>
</tbody>
</table>

Note.  RR = relative risk. *p < .05.
Moderator Analyses

Interaction analyses (Moderator Variable × Treatment Condition) were significant for 4 of the 14 potential moderator variables described in the Measures section for either number of cigarettes smoked (two significant moderators) or for CO level (four significant moderators). However, the pattern of moderators was complex. Given space limitations, we discuss only the two moderators that were significant in both analyses. Those having a chronic illness showed greater treatment effects on both number of cigarettes smoked \( (p = .004) \) and CO level \( (p = .009) \) than those without a chronic illness. Second, those who reported purchasing cigarettes by the carton at baseline (vs. by the pack) showed greater treatment effects on both cigarettes smoked \( (p = .019) \) and CO levels \( (p = .022) \). Intervention effects appeared robust across a variety of other potential moderators including income, ethnicity, health literacy, education, gender, age, the depression screener, and type of medical procedure.

Mediator Analyses

Of the four potential mediator variables analyzed, only number of strategies used was significantly greater among intervention than control participants \( (p = .007) \). However, strategies were not significantly related to outcomes. Self-efficacy (100-point rating) significantly predicted improvements in all dependent variables analyzed, but the reduction intervention was not successful in enhancing efficacy more than the control condition, thus not fulfilling requirements for mediation (Baranowski, Anderson, & Carmack, 1998; Baranowski, Lin, Wetter, Resnicow, & Davis, 1997). The other variables did not meet either of the above mediation conditions.

Discussion

Relatively little is known about nonlaboratory applications of behavioral smoking reduction or about how and under what conditions they work (Hughes & Carpenter, 2006; Pawson et al., 2005; Shiffman et al., 2002). In general, our results found that the behavioral smoking reduction intervention was successful in recruiting smokers, even when offered in the context of a cessation-oriented menu. A sizable proportion of smokers, 20%–30%, depending on the index, who were not willing to quit were willing to attempt reduction in this research project. Because of HIPAA and confidentiality concerns, relatively few data were available on the representativeness of reduction participants. From available data, it appears that smokers selecting reduction were relatively representative of health plan smokers, with the exception that a smaller percentage of Latinos opted for reduction compared with cessation. Those selecting reduction appeared to be at least as heavy smokers as those choosing cessation.

The effectiveness of the intervention was more mixed. It appears that the program produced beneficial effects on both self-report and biochemical measures of smoking exposure, but that these effects were modest and reduced in intent-to-treat analyses because of attrition and large variability. Both measures of clinically significant change (Jacobson & Truax, 1998; Windsor et al., 1999) of the percentage of participants achieving 50% or greater reduction revealed significantly greater improvement for the interven-
penter, 2006); and evaluation of intervention costs and cost effectiveness.

References