

A brief motivational intervention for heavy alcohol use in dental practice settings: Rationale and development

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Abstract

Although brief alcohol interventions have proven effective in a variety of health care settings, the present article describes the development of the first brief intervention for heavy drinkers in dental practice. Elements of motivational interviewing and personalized normative feedback were incorporated in a 3- to 5-minute intervention delivered by dental hygienists. The intervention is guided by a one-page feedback report providing personalized normative feedback regarding the patient's current oral health practices, their drinking in comparison to others, and oral cancer risk associated with current smoking and drinking. Future publications will present data regarding intervention effectiveness from an ongoing randomized trial.

Keywords

alcohol, drinking behavior, heavy drinking, intervention, randomized controlled trial

The potential of screening and brief interventions with referral to treatment for alcohol in dental practices

According to the World Health Organization (Henry-Edwards et al., 2003), alcohol use disorders are one of the most prevalent psychiatric conditions globally and are associated with significant burden of disability. In the United States, however, only a fraction of drinkers meeting lifetime criteria for alcohol

use disorders (14.6%) or alcohol abuse (7.5%) ever receive formal alcohol treatment (Cohen

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et al., 2007). Given the infrequent receipt of formal treatment, screening and brief interventions with referral to treatment (SBIRT) programs have been developed to identify heavy drinkers earlier, before dependence and more severe alcohol-related problems develop. SBIRT approaches (National Institute on Alcohol Abuse and Alcoholism, 2005a) have proven effective in reducing heavy drinking and increasing treatment utilization (Burke et al., 2003; Vasilaki et al., 2006). Consensus panels have recommended such interventions as “best practices” (Institute of Medicine, 1990; Substance Abuse and Mental Health Services Administration, 1999) and, internationally, the World Health Organization has a long-standing SBIRT Collaborative Study (Heather, 2006). Generally, there is increasing interest in assessing SBIRT utility in different health care settings (Cherpitel and Ye, 2008; National Institute on Alcohol Abuse and Alcoholism, 2005a), although only recently has SBIRT been suggested in dental settings (McAuley et al., 2010; McCree, 2012).

A number of factors support SBIRT in dental practice. First, approximately 60 percent–70 percent of US adults aged 18–64 visit a dental provider at least annually (Dye et al., 2007), approaching the percentage visiting other health care providers annually (79%; Pleis et al., 2010). Second, SBIRT in dental practice is consistent with Public Health Service (PHS) alcohol screening guidelines (U.S. Preventive Services Task Force, 2004; Whitlock et al., 2004) and fits with oral cancer screening initiatives in dentistry, especially given the potentiating effects of alcohol and tobacco use on oral cancer risk (Hashibe et al., 2009). Third, while *tobacco* cessation initiatives such as the PHS “5 A’s” (Fiore et al., 2000) and American Dental Hygiene Association’s “Ask, Advise, and Refer” (American Dental Hygiene Association, 2005) have developed in dental practice, comparable *alcohol* reduction approaches have not. Finally, patient acceptance of alcohol SBIRT is indicated by Miller et al. (2006), who found that 75 percent of patients in their study felt that

alcohol screening and counseling were appropriate in dental settings.

This article describes the rationale and development of an SBIRT intervention for use in dental settings, involving a 3- to 5-minute dental hygienist-delivered intervention for heavy drinkers followed by a brief reinforcing message from the dentist.

Method

Intervention-development methodology

The SBIRT dental intervention was developed as a collaborative effort by the multidisciplinary research team composed of behavioral scientists, a clinical psychologist, a motivational interviewing (MI) trainer, and both academic dentists and dental hygienists with clinical practice experience. The intervention-development process is discussed below.

Theoretical foundations for the intervention. The brief intervention developed here was based on two related theoretical foundations—MI and personalized normative feedback (PNF).

MI: Central to our intervention are MI techniques used in intervention delivery. MI is a “client centered, directive style of counseling” (Miller and Rollnick, 2002) that includes client-centered listening strategies, as well as the strategic use of questions, reflections, and affirmations to emphasize motivational client speech. Following from the fundamental MI tenet that resolution of ambivalence or “discrepancy” is the key to behavior change (Neal and Carey, 2004), a first step in MI is often to “develop discrepancy” between the individual and some standard of comparison, often involving comparison with others’ behaviors. Furthermore, MI techniques such as expressing empathy, supporting self-efficacy, avoiding argumentation, and rolling with resistance serve to build on perceived discrepancy to motivate consideration of the pro’s and con’s of behavior change. Furthermore, consistent with

self-perception theory (Bem, 1972), MI avoids confrontation and promotes change talk in which the client voices possible reasons for change.

PNF: Complementing the MI approach, PNF regarding the individual's drinking is used to generate discrepancy. PNF has been used extensively in the research on college student drinking, where heavy drinking students often perceive other students as drinking more than they do (cf. Baer and Carney, 1993). Interventions based on PNF thus provide individuals with feedback about how their drinking is compared with peer-drinking norms (Moreira et al., 2009).

PNF has theoretical roots in self-regulation theory (Kanfer, 1970). As elaborated by Miller and Brown (1991), self-regulation stages include the following: informational input, self-evaluation, and additional processes involving perceived discrepancy and efforts to resolve discrepancy. In this formulation, PNF (as "informational input") plays a key role in providing comparisons with others' drinking behaviors to develop discrepancy and initiate change processes. PNF has commonly been incorporated into MI-based interventions, using "personalized feedback reports" (cf. Walters and Neighbors, 2005), providing a visual summary of the individual's drinking (e.g. overall quantity/frequency and peak drinking), normative comparisons (e.g. amount consumed in relation to peers), often supplemented by associated negative consequences (e.g. tolerance, dependence, and alcohol-related problems).

Based on these theoretical foundations, we developed a feedback report providing personalized information regarding the individual's drinking compared to national gender-specific norms as well as estimates of oral cancer risk associated with current drinking and smoking. This PNF was used to develop discrepancy, which, combined with other MI techniques, was used to elicit "change talk" in support of change.

Preliminary web-survey of dental practitioners' acceptance of and perceived barriers to dental practice-based intervention approach. Further

input to the intervention-development process was obtained through a web-based survey of Virginia dental practitioners (dentists and hygienists). Specifically, the web-survey addressed the acceptance of and perceived barriers to implementation of brief alcohol screening and intervention protocols in dental practice. Email invitations sent to membership lists provided by state dental and dental hygiene associations yielded usable data on a convenience sample of 257 respondents (164 dentists and 93 dental hygienists).

Relevant to intervention feasibility and development (Neff et al., 2010), over 80 percent of both dentists and hygienists agreed or strongly agreed that heavy drinking is an important problem in dental practice. At the same time, both practitioner groups agreed that they were unaware of best strategies to help patients reduce heavy drinking (~75%) and that time constraints were an important concern regarding implementation (60%–62%).

Important differences between dentists and dental hygienists emerged as well ($p < .05$). Compared with dentists, dental hygienists had greater agreement (i.e. agree plus strongly agree) that (a) dental practice offered an "ideal opportunity" to screen and counsel about alcohol (76% vs. 61%); (b) screening and counseling for alcohol were appropriate in dental practice (71% vs. 55%); and (c) screening and counseling were appropriate for the dentist and dental hygienist's roles (78% vs. 61%–64%). Dental hygienists (22%) were also less likely (43%) to be concerned about the effectiveness of alcohol screening and counseling than dentists.

Another finding relevant to intervention development was that dentists reported spending much less time with patients in the typical routine dental visit (compared with a more extensive initial visit) (average 12.32 ± 16.67 minutes; median: 5 minutes) than did hygienists (average of 40 ± 25.96 minutes; median: 40 minutes). These results suggest that the dental hygienist may have the greatest opportunity to conduct the intervention.

In sum, web-survey suggested the viability of dental practice-based interventions; however, barriers to intervention development and implementation included time constraints (i.e. the need for a very brief intervention) and training needs (i.e. a carefully structured protocol that could be easily utilized). Furthermore, the survey results support the use of the hygienist as interventionist.

Informal consultation with local dental practitioners regarding intervention approach. Finally, we conducted informal interviews with 2–3 dentists and 8–10 hygienists practicing in the surrounding Hampton Roads area, who also taught and supervised students part-time in the university's Dental Hygiene Care Facility. These practitioners, interviewed individually or in small groups, were asked about the following issues: (a) the optimal length of the intervention, (b) where to incorporate the intervention in the visit, and (c) the respective roles of the hygienist and dentist in the intervention. These interviews indicated the following: (a) the need for a brief (3–5 minutes) intervention to minimize staff burden; (b) the use of the hygienist as interventionist, given their role in patient education and greater time with the patient during the dental visit; (c) incorporation of the intervention into the dental hygiene visit, before dental assessment and prophylaxis; (d) the use of the dentist to reinforce the hygienist's message, and (e) provision of 8 hours of free continuing education (CE) credits for practitioners as an incentive for study participation.

The logic, structure, and delivery of the resulting SBIRT intervention are discussed below. The effectiveness of the brief intervention protocol described here is being examined in a controlled clinical trial, which randomizes practices to either SBIRT (Intervention; six practices) or assessment-only control conditions (five practices). Patients are assessed at baseline, 3 months, and 6 months to assess changes in alcohol use and alcohol-related problems. Study results will be reported in subsequent publications.

Results

Study recruitment procedures

As participating dental practitioners felt that screening in the dental visit would be disruptive, mailed invitations were sent to patients scheduled for routine dental hygiene visits (not initial visits or emergency visits) within the upcoming 1–2 months. The invitations introduced the project as a study of whether brief discussions with a dental hygienist regarding “ways to improve your oral health” would help to improve oral health and reduce oral cancer risk. Patients returning a postage-paid reply card were contacted by professional telephone interviewers who explained the study as involving preliminary 5- to 7-minute telephone screening interviews and, for those meeting study criteria, longer 20-minute baseline telephone interviews. Prospective participants were also told about random assignment to intervention or control conditions and 3- and 6-month brief follow-up interviews. Participants received gift cards for completing baseline and subsequent interviews; no compensation was provided for the screening. Verbal informed consent was obtained as approved by the Old Dominion University Institutional Review Board.

Intervention eligibility criteria

The intervention was developed for English-speaking adults, aged 21–55. Screening for heavy drinking utilized questions recommended by the National Institute on Alcohol Abuse and Alcoholism (NIAAA, 2005b) regarding typical drinking *frequency* (drinking days per week), *quantity* (drinks per occasion), and *heavy episodic drinking* (5 or more drinks per occasion for males and 4 or more drinks per occasion for females). The eligibility involved weekly consumption of more than 14 drinks for males (or more than 7 drinks for females) or any episode of heavy episodic drinking in the past 30 days.

Brief intervention protocol

The resulting intervention incorporated elements of MI and PNF, delivered during the

dental hygiene visit prior to the oral assessment and prophylaxis (dental cleaning). Table 1 summarizes the intervention approach, mapping key elements of effective brief interventions as proposed by Miller and Rollnick (2002) onto the brief dental intervention. These elements, summarized by the acronym *FRAMES* (Miller and Rollnick, 2002), include the following: (a) *Feedback* regarding consumption and associated risk; (b) emphasis on personal *Responsibility* and choice; (c) *Advice* to change (where appropriate); (d) a *Menu* of change options; (e) an *Empathic* listening approach (not aggressive or authoritarian); and

(f) an emphasis on *Self-efficacy* and optimism around change.

Key to the intervention was a one-page personalized feedback report (see Figure 1), generated prior to the office visit, which provided PNF to the patient and served as a guide to the hygienist for delivering intervention content. Unlike other brief alcohol interventions that emphasize possible negative physical, social, and economic consequences associated with drinking (e.g. Walters and Neighbors, 2005), our approach emphasized the possible consequences of alcohol use for future oral cancer risk. This

Table 1. Mapping of *FRAMES* elements (Miller and Rollnick, 2002) onto dental brief intervention.

<i>FRAMES</i> elements	Definition	Implementation in dental SBIRT	Mode of delivery
Feedback	Feedback regarding consumption and associated risk	Graphs to illustrate <ul style="list-style-type: none"> • Individual drinking compared to age- and gender-matched data • Estimated oral cancer risk based on current drinking and smoking 	Feedback report
Responsibility	Emphasis on personal Responsibility and choice	Emphasis on individual choice and ability to make changes	MI delivery style
Advice	Advice to change (where appropriate)	Avoidance of directive advice-giving; advice given only when solicited	MI delivery style
Menu	Provision of a Menu of change options (suggested self-help resources, treatment programs, AA, twelve-step programs, etc.)	Back of feedback report provided a menu of options: guidelines on safe drinking levels; tips for quitting versus cutting down; websites, quitlines, self-help group contact information	Feedback report
Empathy	Empathic listening approach (not directive, aggressive, authoritarian, or confrontative)	MI-style questions, reflections, summaries, affirmations; avoidance of confrontation	MI delivery style
Self-efficacy	Emphasis on Self-efficacy and optimism regarding change	Encouragement of self-change statements; individual is treated as capable of change; emphasis on the ability to make choices and changes	MI delivery style

SBIRT: screening and brief interventions with referral to treatment; MI: motivational interviewing.

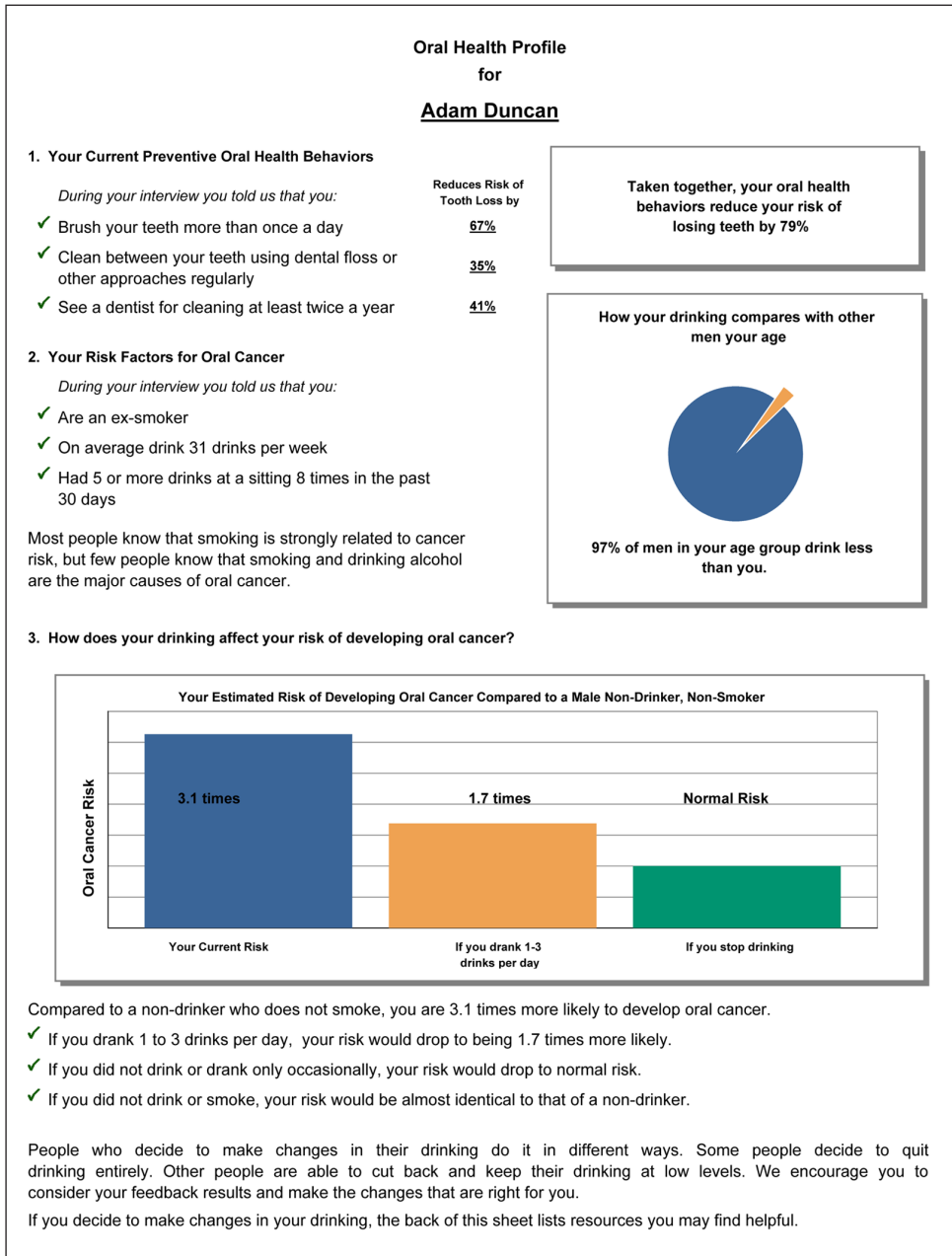


Figure 1. Sample personalized feedback form.

was designed both to be consistent with the oral health promotion theme of our intervention and also to capitalize on patient concerns about avoiding oral cancer.

All the elements of the feedback report (scores, graphs, and messaging) were generated by an Adobe Flash-based scoring and output engine developed by HealthRX Corporation

(www.healthrx.com). Specifically, the web-based tool used input from the telephone screening to develop a personalized profile for each participant, linking their self-reported oral health behaviors, smoking, and drinking to normative drinking data and related oral cancer risk.

Hygienists were trained to use MI strategies in delivering the feedback report. They were trained to greet the patient, remind him/her of their participation in the oral health study, and ask for permission to proceed with reviewing the feedback report. For each section of the report, the hygienist was to explain the feedback item, solicit a response using the tools of MI, and respond with an empathic listening approach (*Empathy*). Where possible, the hygienist was to use questions and reflections to support patient statements that were consistent with motivation and ability to change (*Self-efficacy*). Directive Advice to change was to be avoided unless solicited by the patient. Personal choice (*Responsibility*) and *Self-efficacy* were to be emphasized; the hygienist was trained to emphasize the patient's freedom to make their own decisions about making changes. Similarly, the dentist was trained to avoid giving directive advice to quit or reduce drinking, but rather to reinforce the hygienist's intervention and encourage the patient to consider the information on their feedback report.

As shown in Figure 1, the first section of the feedback report summarized the patient's reported preventive oral health behaviors (brushing, flossing, and dental visits), followed by an estimate of the associated reduction in risk of later tooth loss, derived from the data in the Veterans Affairs Dental Longitudinal Study (Kressin et al., 2003). This section served to build rapport with the patient and provided an opportunity to provide reinforcement for practicing preventive oral health behaviors, building *Self-efficacy*.

The second section of the report summarized the individual's reported smoking and drinking, as well as a colorful graphic (*Feedback*) comparing self-reported drinking to gender- and age-matched national drinking norms from the 2001

National Epidemiologic Survey of Alcohol Related Conditions (Chan et al., 2007). This section provided critical PNF regarding drinking designed to generate discrepancy, providing an opportunity for the hygienist to incorporate MI strategies. Thus, in response to the normative data, patients often made comments such as "I didn't think that I drank that much," or "That can't be right!" Hygienists were trained not to defend the data, but rather to respond reflectively to encourage the patient to think and talk about the information with comments like "So that surprises you?" or "What do you think of that?"

The final section of the report graphically illustrated the individual's estimated risk of developing oral cancer based on their combination of smoking and drinking, compared to a gender-matched non-drinker/non-smoker (Kabat et al., 1994). This graph showed the relative odds of developing oral cancer for different scenarios: (a) at their current level of drinking/smoking, (b) if they drank no more than three drinks per day, and (c) if they did not smoke or drink. This information was provided to capitalize on the patient's interest in minimizing oral cancer risk and was intended to further promote discrepancy, encouraging patients to weigh the pros and cons of their current drinking and begin thinking about change. Hygienists were trained to encourage change talk using open questions such as "What do you think of that?" and "Where does this leave you in thinking about your risk?"

The back of the report (available from authors) provided gender-specific information regarding recommended drinking levels and problems associated with heavy drinking and provided a range (*Menu*) of local and national resources for those wanting to make changes. Patients were given a copy of their form to take with them and were encouraged to reflect on the results and think about changes they could make (if any) that were right for them.

Finally, at the conclusion of the dental visit, patients were given a one-page "Patient Feedback Survey" (available from authors), asking them to indicate specific topics the hygienists had discussed with them (e.g. how

their drinking compared with others of their gender/age). Patients filled this form out prior to leaving the dental office and dropped the form off at the reception desk, keeping a duplicate copy. This form served as (a) a validity check to see what information was presented to patients and (b) a final effort to encourage patients to reflect on changes they might like to make after the intervention.

Description of the intervention training sessions

To accommodate participating practices, 8 hours of intervention training was delivered in either one full-day or two half-day formats. Participants completing training received 8 hours of free CE credits. These free CE credits proved to be potent incentives for study participation as our training fulfilled 8 of 15 hours required annually to maintain state licensure. Trainings were conducted by teams of at least two project staff who had each received approximately 3 days of training by an experienced motivational interviewing trainer (S.T.W.). Trainings were designed to provide an overview of MI principles, to familiarize staff with the feedback sheet and

protocol, and to give hands-on experience in intervention delivery. At the end of the training, each participant delivered a mock intervention, which was audiotaped and later rated by two independent research staff members for fidelity to the intervention protocol.

The structure of the training sessions is described in Table 2. Approximate times are listed for each section, although they varied greatly between training sessions.

Study follow-up rates, MI training effectiveness, and intervention fidelity

Although analyses of randomized controlled trial data are under way to establish intervention effectiveness, preliminary findings address the successfulness of the implementation process.

Study follow-up rates. Follow-up rates for experimental and control participants were 90 percent and 96 percent, respectively, at the 3-month follow-up and 91 percent and 86 percent, respectively, at the 6-month follow-up. Although an initial practitioner concern was that dental patients would react negatively to an alcohol intervention, our findings suggest good patient acceptance.

Table 2. Outline of intervention training sessions.

Section	Description	Approximate time
Training Part A		
Alcohol overview	A description of drinking norms by age, guidelines for "at risk" drinking, and overview of brief interventions and their efficacy	20 minutes
Study overview	Review of study aims as well as methodology for project personnel, practice personnel, and patients	20 minutes
<i>FRAMES</i>	Review of common elements of effective brief interventions	20 minutes
Delivery style	Review of delivery style with specific examples <i>Activity:</i> Practice interviews about something the interviewee would like to change. Debrief to discuss impressions of different interviewer styles	45 minutes
Introduction to MI	Introduction to the basic premise of MI. Illustration and practice using open-ended questions, affirmations, reflective listening, and summaries. Video demonstration	45 minutes

Table 2. (Continued)

Section	Description	Approximate time
Feedback form	Introduction of items on feedback form. Review of each section, with suggestions for how to incorporate MI-consistent dialogue <i>Activity:</i> Conduct the intervention as a team, with one person acting as the patient, and everyone else sharing the job of hygienist delivering the intervention. Group decides how to present information and respond to patient <i>Activity:</i> Conduct intervention in pairs with third person as observer	30 minutes
Advice-giving	An introduction on how to decide if it is appropriate to give advice (and when)	20 minutes
Importance/ confidence rulers	Introduction to scaled questions to assess motivation to change and how to encourage change talk. Video demonstration <i>Activity:</i> Use rulers to assess practitioners' confidence to conduct interventions.	10 minutes
Training Part B		
Study review	Brief review of study aims as well as methodology for project personnel, practice personnel, and patients	45 minutes
Logistics and paperwork	Discussion of details for process and materials necessary for patient recruitment as well as intervention implementation. Discuss how to tailor process to the specific practice	20 minutes
Review of MI-consistent feedback delivery	Review of MI basics, MI-consistent dialogue, and feedback form content. Discussion regarding strategic use techniques to encourage change talk. Video examples of MI-consistent and MI-inconsistent dialogue. Practitioners discuss differences in patient reactions <i>Activity:</i> Turn MI-inconsistent statements and questions into MI-consistent dialogues <i>Activity:</i> Tag-team delivering an intervention	45 minutes
Intervention fidelity	Introduction of technique for assessing intervention fidelity <i>Activity:</i> Conduct interventions in pairs, switching roles between feedback forms	20 minutes
Dentist's role	Overview of the dentist's role: reinforcement of message while avoiding directives <i>Activity:</i> Conduct interventions in pairs, switching roles between feedback forms	10 minutes
Additional practice	<i>Activity:</i> Conduct interventions in pairs, switching roles between feedback forms Demonstration: Trainers demonstrate intervention using MI-consistent dialogue. Dental practitioners follow along with fidelity checks <i>Activity:</i> Conduct interventions in pairs, switching roles between feedback forms	60 minutes
Assessment and feedback	Each practitioner voice-recorded delivering the intervention. Immediate feedback provided by trainers	30 minutes

SBIRT: screening and brief interventions with referral to treatment; MI: motivational interviewing.

Post-training ratings of practitioner MI effectiveness. Audiotaped practice interventions conducted at the end of intervention training sessions (N = 53), independently rated by two project staff members for conformity to study protocols, showed acceptable inter-rater agreement ($\kappa \geq .70$). For each rating dimension, individual rating scores were divided by the possible maximum score for that rating to yield the percentage compliance (out of possible 100%) as follows: (a) asking permission to discuss the feedback form (79% of practitioners); (b) presenting the feedback form information (91%); (c) noting transition statement linking alcohol to oral cancer (49%); (d) using MI elements such as open-ended questions, affirmations, reflections, and summaries (55%); (e) using questions to elicit patient thoughts (63%); and (f) using emphatic listening statements (58%). A composite MI score based on the above items yielded an average of 71% compliance with study protocols. Overall protocol compliance was greatest (~91%) with basic presentation of feedback information; use of MI techniques showed less compliance (55%–79%).

Patient reports of feedback form elements covered. Intervention fidelity was also addressed by the data from patients' "Exit Surveys" completed after the intervention. Coverage by hygienists of key feedback report elements was reported as follows: (a) preventive oral health behaviors (98%), (b) your risk of losing teeth (87%), (c) smoking and tobacco use (87%), (d) drinking and how it compares with others (96%), (e) risk of oral cancer based on your smoking and drinking (100%), and (f) reducing risk of oral cancer by changing your smoking and drinking (100%). These data provide support that the feedback form content was delivered by hygienists and received by patients.

Discussion

This article has presented the rationale and structure for a 3- to 5-minute brief intervention for

heavy drinkers in dental practice settings. The approach incorporates traditional elements of brief interventions and is guided by a one-page personalized feedback report that provides information on the individual's drinking in comparison to others, as well as information on the implications of their current drinking and smoking for possible oral cancer risk. As discussed, the feedback report is designed to create "discrepancy" regarding the patient's drinking and helps facilitate an MI-style interaction with heavy drinking patients. The intervention is designed to capitalize on the teachable moment of the dental visit and concerns about oral cancer risk.

We have also described an ongoing randomized trial evaluating the effectiveness of the intervention. Based on brief intervention and MI approaches, the current approach holds great promise. High patient participation rates indicate that SBIRT in dental practices is acceptable to patients and ratings of practitioner training tapes and Patient Exit Surveys provide some support for the success of the intervention training, although further MI training would clearly improve intervention delivery. Further publications and dissemination activities are planned to encourage adoption of the SBIRT approach by dental practices.

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