

Motivational Interviewing: Application to Oral Health Behaviors

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The purpose of Linking Research to Clinical Practice is to present evidence-based information to clinical dental hygienists so that they can make informed decisions regarding patient treatment and recommendations. Each issue will feature a different topic area of importance to clinical dental hygienists with A BOTTOM LINE to translate the research findings into clinical application.

Almomani, F. Williams, K. Catley, D. Brown, C. Effects of an oral health promotion program in people with mental illness. *J Dent Res.* 2009;88(7):648–52.

Objectives: More knowledge is needed regarding efficient methods of oral health prevention and reducing disparities in oral health. Motivational interviewing (MI) has demonstrated utility for improving health behavior, including among those with serious mental illness (SMI). This study tests whether MI enhances the efficacy of an oral health education intervention in individuals with SMI.

Material and Methods: Sixty individuals were randomly assigned to MI plus oral health education or oral health education alone. Plaque scores, oral health knowledge and self-regulation were assessed at baseline and at 4 and 8 weeks.

Results: Repeated-measures of ANOVA showed improvement ($p < 0.05$) in plaque, autonomous regulation and oral health knowledge across time for both groups. However, individuals receiving MI improved significantly more when

compared with those receiving only oral health education.

Conclusion: Results suggest that MI is effective for enhancing short-term oral health behavior change for people with SMI and may be useful for the general population.

Commentary

A primary role of the dental hygienist is to assist individuals in achieving optimal oral health. Beyond professionally delivered care, dental hygienists encourage their patients to practice effective dental plaque removal, attend to healthy dietary and lifestyle habits and adhere to regular professional dental maintenance visits. This requires a thorough knowledge of oral disease processes coupled with an understanding of human behavior and motivation. It is not uncommon for dental hygienists to encounter patients who are poorly adherent or patently resistant to their professional recommendations. Yet clinicians are taught to provide oral health education to all patients, irrespective of their intrinsic motivation, with the hope that knowledge will somehow magically increase motivation and change behavior. Unfortunately, the provision of education and expert advice is rarely sufficient to bring about the desired patient behavior change. All too often, a dynamic develops in which the dental hygienist takes on the role of “the persuader,” arguing for change, while the patient takes on the role of “the resistor,” shooting down all suggestions and providing a long list of reasons why they cannot follow the recommendations.

Patients may also resist passively by ignoring advice and failing to return for care. The end result is that dental hygienists become frustrated, which makes them less effective as a change agent.

This scenario can be even more complicated when providing care to individuals with serious mental illness (SMI). The illness can increase the individual’s risk for tooth decay and periodontal diseases, as well as medication-induced xerostomia. Apathy may also impact their ability and/or desire to effectively manage their oral health. As a result, preventive dental education is particularly important for people with SMI. The current study explored the effectiveness of MI as an adjunct to oral health education in a population of individuals with SMI.

Previous studies have shown that MI can be effective in enhancing motivation for changing a wide variety of health behaviors in populations with and without SMI. MI uses tried and true methods to elicit the patient’s internal motivation towards the desired behavior. In contrast to traditional oral health education, this method does not rely on persuasion or unrequested advice to stimulate external reasons for change.

The study subjects consisted of 60 adults with confirmed diagnoses of schizophrenia, bipolar disorder or depression. Subjects were recruited from a community program that provides support services to individuals with SMI. In order to qualify for participation, subjects had to have at least 1 gradable tooth in each sextant and be capable of providing informed consent. Subjects were excluded if

they had obvious periodontal disease, orthodontic appliances, severe physical or cognitive disabilities or were currently using a mechanical tooth brush. At the baseline visit, subjects' oral hygiene was assessed using the Turesky Modification of the Quigley Hein Plaque Index. Additionally, their knowledge about oral health/mental illnesses and their motivation for engaging in daily plaque removal were evaluated. Following baseline, subjects were randomly assigned to receive either traditional oral health education or a brief motivational interviewing intervention prior to oral health education.

The traditional oral health education intervention consisted of information about the oral health effects of SMI, the advantages of good oral hygiene and the disadvantages of bad oral hygiene. The MI intervention, which was conducted prior to the education session, focused on exploring pros and cons, motivation and confidence and personal values related to daily tooth brushing and oral health. All subjects received printed material summarizing the educational information, a battery powered toothbrush (Crest® Spin-Brush Pro), a reminder system and weekly telephone calls for 4 weeks.

Data on oral hygiene (plaque score), knowledge scores and motivation scores (internal, external and introjected motivation) were compared between the 2 groups over the 2 month study using a 2-factor repeated measure ANOVA. The results showed that both groups mean plaque scores decreased between the baseline and 1 month observations (3.6 to 2.3 and 3.3 to 2.6 for MI and traditional oral hygiene, respectively). However, only the MI group's plaque score continued to decrease between 1 and 2 month observations (from 2.3 to 1.9). This clinically meaningful decrease in plaque score over time was statistically significant ($p < .05$).

Oral health knowledge scores increased significantly between base-

line and 1 month for both groups, and remained constant until the end of the study. The MI group had a slightly greater improvement in knowledge (32.9 versus 27.5 at the 2 month observation period). This, coupled with the decreasing plaque scores, may suggest that the MI subjects were more attentive to the education session than subjects who received only education.

Of particular interest was the change in motivation scores for the 2 groups. While neither group showed significant increase in internal or external motivation, the MI group had an increase in introjected motivation over time (increase from 4.5 to 6.1 for MI compared to 4.1 to 5.0 for only oral hygiene). According to self-determination theory, introjected motivation is based on guilt and falls somewhere between internal and external motivation. The authors hypothesized that an increase in guilt-related motivation for subjects in the MI group may be unique to this population, as the nature of SMI and/or psychotropic medications may diminish overall motivation and make it more difficult for subjects to internalize motivation. They also suggested that greater introjected motivation may actually be preferable to external motivation for this population.

Although the study was brief, conducted over only a 2 month period, the results have important implications for dental hygienists. This study provides some of the first short-term evidence suggesting that including a brief MI session before oral health education may improve motivation, knowledge and oral hygiene better than education alone in individuals with SMI. Individuals with SMI have an unusually high oral health disease burden, yet are often considered a poor investment of the clinician's time. Applying principals from cognitive behavior theory to patient engagement in the clinical environment shows promise for improving oral health behaviors

necessary for better oral health. The authors conclude that these results support use of MI as a strategy for improving oral health in poorly motivated individuals while also suggesting that future studies need to explore effectiveness of MI for improving oral health in other patient populations.

Jönsson B, Ohrn K, Oscarson N, Lindberg P. An individually tailored treatment program for improved oral hygiene: introduction of a new course of action in health education for patients with periodontitis. *Int J Dent Hyg.* 2009;7(3):166–75.

Objective: To describe and evaluate an individually tailored treatment program based on a behavioral medicine approach to oral hygiene self-care for patients with chronic periodontitis.

Material and Methods: Two experimental single-case studies with multiple-baseline designs across different self-administered oral hygiene behaviors were conducted. Cognitive behavioral techniques were used to organize the strategies for the intervention and the approach to counseling was inspired by and structured in accordance with Motivational Interviewing (MI). The central features in the program were the individual analysis of knowledge and oral hygiene habits, individually set goals for oral hygiene behavior, practice of manual dexterity for oral hygiene aids, continuous self-monitoring of the behavior and prevention of relapse.

Results: Both participants reached the pre-decided criteria for clinical significance in reducing plaque and bleeding on probing. Reductions of periodontal probing depth were achieved as well. The positive results remained stable throughout the 2 year study period.

Conclusion: The successful application of this educational model suggests that it could be used as a

method for tailoring interventions targeted to oral hygiene for patients with periodontal conditions. The program will now be tested in a larger randomized controlled trial.

Commentary

Improving the overall health of patients with chronic periodontitis continues to be an important role for dental hygienists. Despite the short-term success of scaling and root planing, achieving long-term periodontal health is predicated on patients' willingness and ability to engage in the effective oral hygiene behaviors at home. To date, few studies have applied health theories and employed strategies that are known for promoting good health-related behaviors. The theoretical foundation used in this study was the Social Cognitive Theory, a well-known theory used for understanding factors related to health behaviors. This theory frames behavior as a complex interrelationship between several important factors: self-efficacy, knowledge, expectations and individual values/health goals. Because a wealth of literature in other health fields has shown consistently better outcomes when interventions are theoretically based, these authors hypothesized that an oral health program based on these tenets would be successful in achieving good health outcomes in individuals with chronic disease. Therefore, this study describes implementation of a novel treatment program for self-care and evaluates the long-term success of such a program.

As a proof of concept study, the study reports on 2 experimental single-case studies of patients with persistently poor periodontal disease control. A 50-year-old female non-smoker and a 60-year-old male smoker comprised the subjects for this study. Both were followed initially at weekly intervals to establish multiple baselines against which change over time could be com-

pared. The intervention consisted of 4 distinct phases. The baseline phase consisted of collecting periodontal probing depths, bleeding on probing, plaque index and gingival index at 3 sessions over a 3 week period, as well as assessing information on self-reported oral hygiene care at home. The second phase consisted of a MI-based intervention phase where patients attended 45 to 75 minute sessions each week for a 3 week period. Initially, an interview was conducted to understand the patient's perspectives and knowledge of oral health, previous experiences and expected outcomes. Patients identified 3 to 5 personal goals related to oral health that were important to them but were not directly related to their periodontal status. Some goals were related to behavior (achieving better cleaning) or psychological (avoiding bad breath) but all reflected the individuals desire for future oral health and treatment. Based on these goals, the dental hygienist made recommendations for self-care aids and then explored the patient's motivation and ability to use these aids. Plaque was disclosed prior to the discussion to initiate the conversation and engage the patient in discovery about their current status. The third phase (which occurred over a 6 week period) included professional scaling and root planing, along with supportive integration of the home care aids into routine home care. The clinician allowed patients to develop their self-care routines at their own pace. From month 3 through 24, patients returned for 3 follow-up examinations and 2 maintenance care sessions. This comprised the follow-up and final phase of the study. At all visits during the final phase, plaque and gingival health measures were collected.

Results for plaque scores and gingival index scores were plotted for each phase over the 24 month study period for the 2 individuals. For both patients, there were similar trends in oral health measures across time.

During the baseline phase, there was very little change in either plaque or gingival scores. However, once the MI phase was implemented, there was a clear trend for decreasing plaque and gingival inflammation during the 3 week phase. For the female patient, plaque and gingivitis scores bottomed out at the end of phase 2 and remained low for the remaining 24 weeks of the study. For the male patient, scores continued to decrease during phase 3 and bottomed out at the end of that phase. At that point, his plaque and gingival index score remained very low for the remainder of the 2 year period. It is notable that the change in bleeding on probing for the female patient decreased from 68% during the baseline phase to 6% at the 2 year follow-up. Similar decreases were noted for the male patient with a decrease from 83% to 10% over the study period.

These results demonstrate that an individually tailored oral health intervention that engages the patient in problem solving and setting goals can be highly effective at achieving periodontal stability over a sustained period of time. As a longitudinal proof of concept study, it provides important information regarding the role patient engagement can play in controlling periodontal disease over a sustained period of time. Assisting patients in identifying internally valued cognitive and behavioral strategies using MI, coupled with professional care, gave the dental hygienist a real opportunity to support behavior change in these 2 individuals. While it may be argued that the amount of time required for the initial 3 phases is not practical in terms of appointment time or financial expenditures in the private dental office, the sustained positive effect on periodontal health over 2 years time may suggest that this front-loaded approach to patient education may be worth the initial time and effort if it results in life-long oral health behavior changes.

Clearly, results from a single-

case study on 2 patients cannot be generalized to a larger population of periodontal patients. The authors acknowledge this limitation and argue effectively that these results give support for advancing knowledge in this area in a larger randomized clinical trial. Future studies might also want to explore how much “intervention dose” is needed to engage patients and elicit motivation to improve oral health care at home. This study provided the same “intervention dose” to the 2 individuals and achieved excellent outcomes. Whether that amount of contact time is needed remains unknown.

The Bottom Line

Engaging patients and facilitating oral health related behavior change is one of the most rewarding and concomitantly challenging roles for dental hygiene clinicians. As with most chronic conditions, periodontal disease is largely preventable but requires good oral health behaviors at home and adherence to periodic maintenance visits. Evidence suggests that adherence to health recommendations made by clinicians is as important as professionally delivered care for controlling disease and maintaining periodontal stability. For this reason, professional treatment of periodontal patients requires multiple skills, including but not limited to knowledge of the periodontal disease process and associated risk factors, advanced instrumentation skills, knowledge about health behaviors in humans and understanding the dynamic process of motivation.

Patient education is primarily based on providing information about periodontal disease along with persuasion to improve oral hygiene or adhere to recommendations. A large body of literature increasingly suggests that providing education and expert advice is rarely sufficient to induce patient behavior change. When patients are not ready for change, they may actively resist suggestions by finding excuses for their

behaviors or passively resist by ignoring advice.

An emerging body of science in cognitive psychology is supporting that educational and therapeutic interventions consistent with theories of behavior change are more likely to succeed. MI is one such strategy that targets health-related behavior change by encouraging patients to express their own reasons for and against change, and to think about how their current behaviors and associated health status affect their core values and life preferences. MI has shown utility in improving health related behaviors in smoking, drug addiction, exercise, weight reduction, diabetes management, medication adherence and condom use, and these 2 studies extend our knowledge about the potential role MI can play in improving oral health. MI is a client-centered, clinician directed counseling style for encouraging behavior change by helping patients explore and resolve ambivalence they might have related to health behaviors. It requires the dental hygienist to assume the role of a sensitive and supportive advocate rather than persuasive expert. It is based on recognizing that there are well-established factors associated with change — individual autonomy, intrinsic motivation, feelings of self-efficacy, connecting the change with personal values, having a sense of perceived control and being at a point of readiness for change.

These 2 studies suggest that MI, whether brief (15 to 20 minute sessions) or extended (multiple 45 minute sessions) can produce short and long-term oral health behavior changes, respectively. Although the science on MI for use in managing oral diseases is still fairly young, there is increasing interest in this approach for improving oral health in the dental clinical environment. Currently, there are multiple randomized clinical trials being conducted that will enhance our understanding of dental patient engagement. Until

then, the following conclusions can be supported:

- A brief MI intervention for individuals with mental illnesses is more effective at reducing plaque scores, in the short run, than traditional oral hygiene education
- An intensive, individually tailored treatment program can reduce plaque and gingivitis, and this effect can extend 21 months beyond the completion of the intervention
- MI may improve our understanding of motivation and provide dental hygienists with a new strategy for affecting the oral health of our patients

Summary

The practice of dental hygiene can be frustrating when patients fail to heed our professional recommendations and experience disease progression. We can all relate to situations where, despite our best efforts, patients with progressive disease fail to change behaviors and end up losing teeth unnecessarily. It is critical to understand that all behavior change (whether related to weight loss, increased exercise, tobacco cessation, adherence to medications or improved oral hygiene) involves some level of ambivalence. In MI, the role of the dental hygienist is to engage the patient in meaningful interaction where the patient has the opportunity to explore their values and beliefs about oral/dental health, examine pros and cons related to changing oral health behaviors and articulate and resolve ambivalence to change in a non-judgmental environment. Ultimately, this strategy elicits the patient’s own motivation towards behavior change and allows them to become invested in the change process. It is only when patients are invested in their own behavior that optimal oral health can be achieved.

Keeping an eye on the evolution of scientific evidence is critical for

dental hygienists to be maximally effective in supporting health-related behavior change for individuals. Exciting advances in cognitive psychology are informing the process of care in applied health sciences such as dental hygiene. MI is one such advanced strategy that can be incorporated into regular patient care in the dental office. Educational pro-

grams are increasingly modifying patient education curricula to teach the listening and communication skills necessary for MI. Numerous training programs exist around the United States and internationally. A one day MI training program can be beneficial for clinicians who are interested in advancing skills in patient engagement. Several corporate

sponsors are developing materials and programs to facilitate dental hygienists' understanding of MI. As evidence increases in this area, it may change the manner in which we engage our patients and effectively communicate. These studies offer some insight into early effectiveness of MI for oral health behavior change.