

Evaluating the Effects of Coaching to Improve Motivational Interviewing Skills of Dental Hygiene Students

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Introduction

Education of individuals or groups is a primary role of dental hygienists. This role is further defined as developing someone to adopt efficient behaviors to attain better oral health.¹ A typical dental hygiene patient education strategy is one in which the dental hygienist or dental hygiene student communicates information and the patient changes their habits based upon the information given.¹⁻³ Knowledge, however, does not consistently impart an interest in developing the skills for daily inter-dental hygiene,^{4,5} or sustaining behavioral change in oral hygiene habits.⁶ As such, alternative approaches to elicit a patient's behavioral change are warranted.

A number of well-established health psychology models have been adapted to oral hygiene education providing alternative approaches to eliciting behavior change.⁷⁻¹² While these models may be included in a prerequisite psychology course taken by dental hygiene students, their use may not be well-integrated into the professional dental hygiene curriculum, nor applied in patient care. Students may be instructed in the components of patient education,¹³ however, they may not be instructed on how to elicit behavioral change in an oral health setting.

When discussing behavioral

Abstract

Purpose: Motivational Interviewing (MI) is a style of encouraging and supporting patients in making their own choices in matters concerning their health. MI is emerging in health care as a viable strategy for enhancing a patient's intrinsic motivation to change self care. The purpose of this pilot study was to determine the effects and level of incorporation of coaching to improve MI adherence of dental hygiene students' patient education presentations as measured by parts of the Motivational Interviewing Integrity Coding System (MITI) and Motivational Interviewing Skills Code (MISC).

Methods: A convenience sample of second year dental hygiene students from a Midwestern community college were invited to participate in the study. This pilot study utilized a pre- and post-test design to evaluate the effect of coaching to improve MI scores of students. Students were audio taped during 2 brief patient education sessions. Upon completion of the first tape, students received feedback and coaching in MI and then made a second tape of a brief patient education encounter.

Results: Student subjects changed behavior scores in the direction appropriate to MI following coaching on most measures. Summary scores indicate an improvement in the use of open questions, complex reflections and MI adherence, but not in change talk or reflections-to-questions ratio.

Conclusions: The use of coaching sessions improved the skills of dental hygiene students learning MI-adherent behaviors.

Key Words: brief motivational interviewing, patient education, change talk, open questions

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change in relationship to general and oral health self care, patients are the key decision makers. Sustainable change is not successful when

dictated to the patient – change must come from within the individual. This forms the basis for Motivational Interviewing (MI). Accord-

ing to Miller and Rollnick, “MI is a client-centered, directive method for enhancing intrinsic motivation to change by exploring and resolving ambivalence.”¹⁴ The counselor invites the client to verbalize what change they are willing to make in their behavior, called eliciting “change talk.” Change talk is defined as speech that indicates a particular movement toward change, and is a valuable indicator as to whether or not the patient will change their behavior.¹⁴

MI techniques have been investigated for treatment of diseases such as asthma, eating disorders, exercising, obesity and early childhood caries, and it has also been used for increasing exercise, all with some success in treatment.^{15–19} There is early evidence to suggest that this technique can be successfully integrated in dental education.²⁰ The purpose of this pilot study was to determine the effects and level of incorporation of brief MI feedback/coaching on dental hygiene students’ patient education presentations as measured by parts of Motivational Interviewing Integrity Coding System (MITI) and Motivational Interviewing Skill Code (MISC).

Review of the Literature

To begin to understand how people change behaviors, it is important to think first about why people change their behaviors.¹⁴ A common held and often reproduced belief asserts that educating patients about the negative consequences involved in a behavior is enough to elicit change. If that were true, there would be more dental hygiene patients using preventive dental aids on a daily basis and fewer patients using tobacco. In contrast, MI is predicated on a different conceptual model. It is based upon the works of Carl Rogers, which emphasizes a patient-centered philosophy.¹⁴ Miller and Rollnick believe that MI is more “a fundamental spirit” than a technique.¹⁴ It is a style of communication, encouraging and supporting patients in making their own choices in

matters concerning their health. The decision comes from within the patient, not the counselor, allowing the patient to have complete autonomy in the decision-making process.²¹

Four Guiding Principles and Methods of Motivational Interviewing

Principles in health psychology may be based upon research and provide the basis to form the process to achieve desired goals.²² There are 4 guiding principles that define MI technique: resisting the righting reflex, understanding and exploring the patient’s own motivations to overcome ambivalence, to listen with empathy and to empower the patient by encouraging hope and optimism.²¹

The means by which these principles are attained are represented by the open questions, affirmations, reflective listening and summaries methods (OARS). When initiating a discussion of behavioral change in an oral hygiene session, the 4 OARS are important methods to use throughout the entire process of MI.¹⁴

Open ended questions

Open questions elicit more than brief responses in order to build understanding and create trust between dental hygienist and patient. It is recommended to start with an open question to stimulate discussion and then follow with reflective listening.²¹ There are certainly acceptable times to use closed questions, but they should be kept to a minimum. Examples of different types of open questions can be generated through the desire, ability, reasons and need method (DARN). DARN consists of questions that require more than one word answers and can encourage change talk. Questions such as “What do you want to have happen?” or “What are you able to do?” begin to address the patient’s reasons for making a change.²¹

Asking these forms of open questions allows patients to say what change they would like to make in their behavior, thus encourag-

ing change talk. Again, it is not the advice of the dental hygienist, but the desire of the patient to decide what change can be accomplished. “I think I can,” “I will” and “I can do this” are all examples of change talk. Change talk is a valuable indicator as to whether the patient will change their behavior or not.¹⁴ In the example of flossing, a patient may state “I can floss at night.” This indicates a change in habit or change talk. A study by Amrhein et al indicates there is a definite pattern to a commitment to change and patient language. Change talk was found to be the strongest indicator of behavior change.²³ Once the change has been stated, it may be tempting to move on in the discussion, but it can be an opportunity for the patient to elaborate and reinforce the idea of change within their own mind.

Once a desire for making a change has been brought forward by the patient through an open dialogue, the dental hygienist can then offer suggestions only after asking if the patient is interested in receiving such information. After receiving permission to give information, the dental hygienist can then offer advice in a manner more receptive to the patient in a more MI-adherent manner.²¹ An example would be to ask if the patient would like to know what others have done in the same situation.

Affirmations

Affirmations encourage when someone is doing something right and will also build rapport.¹⁴ Most patients do attempt some type of home care. Whatever they are doing correctly should be affirmed, especially if they are trying to incorporate a new skill, such as flossing. This will allow a sense of hope that they can improve their oral health and are showing signs of achieving that goal. If a patient shows a change in a plaque score, acknowledge the change and congratulate the patient on doing a great job. Do not always focus on what is incorrect – a simple affirmation would be to acknowledge an area where the patient’s mouth is

healthy due to proper home care.

Reflective listening

Reflective listening is a method used in MI to show a means of understanding someone without passing judgment.²⁴ It produces a sense of acceptance and empathy between dental hygienist and patient. It allows patients to feel as though they have been heard. When this occurs, Miller and Rollnick suggest that it allows the patient to begin the process of at least considering change.¹⁴ While reflective listening is the most important and most challenging skill to develop, it is a critical element in using MI. If a patient has trouble with flossing because of not having enough time due to a busy schedule, a response could be, “You do have a lot on your plate when getting ready in the morning.”

Summations

After the patient has decided what to do differently by initiating change talk, sum up their ideas and hold the patient accountable.¹⁴ If the patient has decided to floss at night, write it down in the treatment notes and say, “That sounds like a good plan, and let me know at the next appointment how that works for you.”

Using MI during patient education requires learning new approaches and then practicing to acquire the true spirit of MI by using all of these methods. Use of MI in patient education in dental hygiene has not been explored. To date, there are a few studies showing positive trends in the use of MI in dentistry.

Application of Motivational Interviewing in Dentistry

The effect of teaching Brief Motivational Interviewing to dental students for tobacco cessation counseling was evaluated in a pre- and post-test research design.²⁰ Although long term patient behavioral change was not assessed, coaching did result in patients talking more and asking more questions in sessions of students with Brief Motivational Interviewing training. This style of en-

couraging behavioral change could be applied to dental hygiene patient education techniques.²⁰

Weinstein et al compared MI intervention to standard health education practices with parents of children susceptible to early childhood caries (ECC).²⁵ An assessment of caries at the end of 1 year indicated those in the MI group had fewer caries than those in the control group. A follow-up 2 year study conducted by Weinstein et al indicated that MI counseling yielded an increase in parent compliance with their children receiving fluoride varnish treatments as compared to the control group not exposed to MI counseling. It had a positive effect upon seeking preventive health measures as compared to traditionally educated groups.²⁶

The Importance of Training

Training is important to instill the 4 guiding principles and OARS into the educational toolbox of health care educators. Many studies audiotape sessions and provide feedback for the counselor or therapist.²⁷⁻²⁹ Study and practice are requisites to clinician counselors’ development of effective patient education techniques while using the principles of MI. Emmons and Rollnick stated that behavioral change by the counselor as a result of training is as important as the behavioral change for the patient.³⁰

In a clinical trial study by Miller et al, feedback and coaching of MI skills were compared to standard training and self-trained groups.³¹ Audiotapes of sessions were used to compute scores by using global MI spirit scores and behavioral counts by comparing base line 4 and 8 month tapes. Feedback/coaching groups attained a more consistent score of incorporating MI skills during patient education than the other groups.

Methodology

Sample

A convenience sample of second year dental hygiene students from a Midwestern community college were invited to participate in the

study. Students were given a description of the study, including their right to refuse participation and to withdraw from the study at any time for any reason. No personal identifiable information was collected as part of study procedures. This study was approved by the University of Missouri, Kansas City Social Science Institutional Review Board for expedited review.

Design

The effect of teaching Brief Motivational Interviewing to dental hygiene students for patient education behavioral counseling was evaluated in pre- and post-test research design. Students were audio taped during 2 patient education sessions. Students selected patients for the sessions, and if a patient was not available, they role-played with one another. Research indicates that students learn to develop MI skills whether they use standardized patients or role-play with one another and receive feedback from peers.³² In the first taping, clinic patients were available for 9 students, and 6 students role-played with other students acting as patients. In the second taping, clinic patients were available for 8 students and 7 students role-played with other students. The first audiotape session recorded the student subjects providing patient education using previously learned MI techniques. Upon completion of the first tape, students received feedback and coaching in MI from a registered dental hygienist that had previous training in MI. Following feedback/coaching sessions, all student subjects made a second tape of a patient education encounter with a patient of their choice.

Procedures

All dental hygiene subjects were given literature to read, which explains that patients do not always change their oral health habits strictly when given advice about how to develop a healthy behavior. The literature discussed how people change their behavior and how to facilitate the change and introduced

the principles and uses of MI in oral health settings.³³ In addition, the training was based on Motivational Interviewing in Health Care by Rollnick, Miller and Butler.²¹ There were 2 consecutive sessions: one lasting 4 hours and the other 3 hours in duration. Sessions consisted of a Power Point lecture with handouts and discussion explaining the guiding principles of MI and use of OARS. Student subjects also practiced exercises of various forms of communication styles, including guiding, directing and listening styles, open questions and complex reflections. Student subjects were trained by a registered dental hygienist who received training in a moderate level of MI by attending a 2 day training session.

Students completed their first tape following the training sessions. The tapes were coded by a trained and blinded coder using the MITI. Each student was assigned a unique subject number randomly. The coder provided feedback and trained the registered dental hygienist on how to provide feedback/coaching to student subjects. Feedback/coaching sessions were done individually by phone and averaged 30 to 40 minutes each. They consisted of providing students with subject areas for warranting improvement, emphasizing the posing of more open-ended questions, expressing more empathy, providing affirmations and listening for change talk. Upon completion of the feedback/coaching sessions, student subjects made their second tape. After all of the tapes were recorded, the tapes were evaluated by a second MITI coder, blind to whether the taping occurred before or after coaching. This final coding was done by a co-author of the MITI.³⁴

Instrument

The MITI was used to measure students use of MI techniques during a patient education session.³⁴ The MITI includes global rater scales designed to be used on longer coding sessions than were available in this study. Therefore, the global rater scales were omitted from the coding

and only the behavior counts of the student subjects were obtained. A second instrument, the MISC, which is a parent instrument to the MITI,³⁴ was added as a method to code behavior counts of patients. The MISC is useful to measure patient change talk and counter change talk.³⁷

The coding calculated behavior counts of both students and patients. Behavior counts require the coder to count the number of student behaviors throughout the session such as giving information, MI adherent, MI non-adherent, open and closed questions and simple and complex reflections. These are all components of MI. The coder is required only to count, not to judge the quality or overall adequacy of the session.

Reliability of the Instrument

Tests of the MITI coding system attain acceptable rates of intra-class correlation coefficients (ICC). In one study, the coefficients ranged from 0.5 to 0.9,³⁴ and in the second, the items showed a coherent pattern of inter-item correlations.³⁵ Inter-rater reliability for the MISC was confirmed through a clinical trial yielding an intra-class correlation of raters in the good to excellent range.³⁶

Data Analysis

Summary scores were tallied as follows: percent of complex reflections divided by total reflections, percent of open questions divided by the sum of open and closed questions, reflection-to-question ratio and the percent MI adherent statements divided by the sum of MI adherent and non-adherent statements. Variations in the behavior counts from pre- to post-test were used to identify dental hygiene student competency in MI.³⁴

The Wilcoxon signed ranks and paired t-tests were used to compare pre-coaching scores with post-coaching scores.

Results

Fifteen second year dental hygiene students participated in this study. Students were female and

ranged in age from 20 to 35. No student subjects dropped out or refused to participate in the study.

Student and patient statements were coded into domains according to behavior skills measured by MITI and MISC requirements. Domains consistent with MI-supportive behaviors are: MI adherence, open questions, complex reflections, simple reflections and change talk. The remaining domains (gives information, non-adherent statements, closed questions and counter change talk) are associated with behaviors contrary to MI. To assist the reader in tracking the direction of observed behaviors, each table includes a column indicating the desired direction for each set of data.

With a few exceptions, the students changed behavior frequencies in the direction appropriate to MI (Figure 1, Table I). Students made more MI adherent interventions, they made fewer interventions that were MI non-adherent, they asked fewer closed questions and they elicited more change talk following coaching. In addition, counter change talk remained at zero, which was the desired rate. However, the only significant change was the reduction in closed questions. Increases in open-ended questions, complex reflections and simple reflections would have supported the hypotheses, but were not demonstrated.

The behavior domains of gives information, MI adherence and MI non-adherence were related to length of session. To control for length of session, these frequencies were divided by the session length, producing rates that are presented in Table II, along with the observed behaviors per minute.

All the rates changed in the desired MI behavior direction. Student subjects showed an improvement by decreasing rates of giving information, increasing rates of MI adherent interventions and decreasing rates of MI non-adherent interventions. However, the only significant change was the decrease rate of MI non-adherence.

Figure I: Median Motivational Interviewing behavioral frequencies for before and after feedback/coaching of dental hygiene students (n=15)

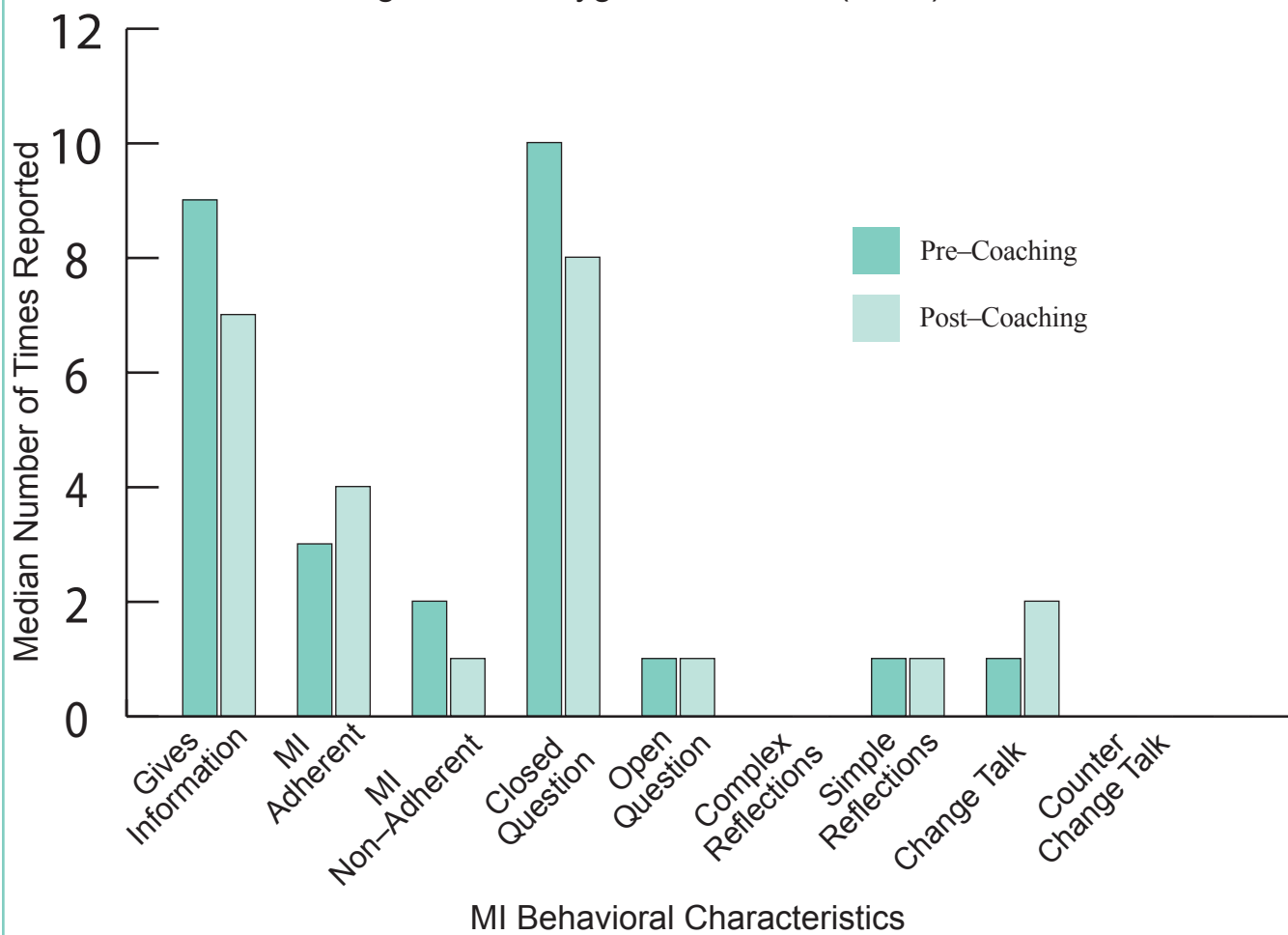


Table III presents tallied mean and standard deviation summary scores according to MITI and MISC procedures. Percent of open questions is calculated by the number of open questions divided by the sum of open and closed questions, percent of complex reflections is complex reflections divided by total reflections, reflection-to-question ratio is the total number of reflections divided by the total number of questions, percent MI adherence is the number of MI adherent statements divided by the sum of MI adherent and non-adherent statements and the percent change talk is the number of change talk statements divided by the number of change talk statements plus the number of counter change talk statements by the patient. In all cases, an increase in the proportion indicates that students demonstrated MI sup-

portive behaviors.

In summary, Table III shows that the student subjects' change was in the desired direction for percent open questions, percent complex reflections and percent MI adherence, although only the percent MI adherence showed a significant change. The reflection-to-questions ratio and percent change talk scores went in an undesirable direction, although none of the changes were significant.

Discussion

It has already been demonstrated that health professionals, including dental students, can learn Brief Motivational Interviewing.^{15-19,38} This pilot study demonstrates that certain MI skills were improved as a result of coaching.

Competence in MI is a complex process of learning and integrating

various skills. After learning skills, the clinician must learn how and when to implement the various skills to become successful in providing a climate for change in the patient.¹⁴ Miller and Mount indicate that MI training needs to focus on improving selected behaviors and reducing other behaviors over time.³⁹ In this study, areas of MI adherence were measured by behavior counts from 2 testing instruments: the MITI and the MISC.

Coaching provided in this study emphasized the need for dental hygiene students to provide more affirmations, to ask more open questions and to ask fewer closed questions. The coaching sessions did not emphasize reflections. The improvements observed in this pilot study reflected the priorities emphasized in the coaching sessions. Students

Table I: Median MI and patient behavioral frequencies for before and after feedback/coaching of dental hygiene students from data in Figure I (p-value<.05)

	Pre-Coaching	Post-Coaching	Desired direction of behavioral change	Difference	Significance (Wilcoxon Signed Ranks test)
Gives Information	9	7	-	-2	ns
MI Adherent	3	4	+	+1	ns
MI Non-adherent	2	1	-	-1	ns
Closed Questions	10	8	-	-2	.01
Open Questions	1	1	+	0	ns
Complex Reflections	0	0	+	0	ns
Simple Reflections	1	1	+	0	ns
Change Talk	1	2	+	+1	ns
Counter Change Talk	0	0	-	0	ns

demonstrated a positive change (but not significant) in asking more open-ended questions following coaching, and showed a significant change in percentage of MI-adherent behaviors.

Study Limitations

One of the limitations of this study was lack of access to an equivalent control group. A control group would have determined whether students improved spontaneously without coaching. Considering the complexity of practicing MI, it is unlikely that students would spontaneously start practicing all aspects of MI. However, there may be certain features that students would improve on simply as a matter of experience (rather than from coaching), and this study design would not be able to detect that.

Additionally, students did not receive reinforcement from instructors of MI behavior skills while in clinic when providing patient education. A future study should include teaching MI methods to instructors in order to reinforce skills, or as a way to provide an ongoing intervention as students acquire new MI skills. Between the 2 taping sessions was a period of several months without

Table II: Mean rates and standard deviations of those MI behaviors that correlate with length of session frequency of behaviors per minute before and after feedback/coaching (n=15)

Behaviors of student subjects	Rate before coaching	Rate after coaching	Desired direction of behavioral change	Significance paired t-test
Give Information	1.43(.57)	1.36 (.54)	-	ns
MI Adherent	.56 (.28)	.83 (.68)	+	ns
MI Non-adherent	.35 (.28)	.17 (.15)	-	.03
Length of session in minutes	6.5 (4.8)	6.3 (4.0)		ns

Table III: Mean MITI and MISC summary scores of before and after feedback/coaching dental hygiene students (n=15)

Percent of behavior scores of student subjects	Before coaching	After coaching	Desired direction of change	Significance paired t test
Open questions	9 (9)	13 (10)	+	ns
Complex Reflections	2 (18)	6 (18)	+	ns
Reflections to questions	14 (13)	9 (11)	+	ns
Change Talk	82 (21)	79 (28)	+	ns
Percent MI adherence	64 (25)	77 (23)	+	.048

any reinforcement for students to develop skills after their initial didactic course. Instead, there was a tendency to implement patient education as they were previously taught by giving advice and demonstrating effective tooth brushing and flossing.

As stated earlier, training is vital to learning MI.^{30,31} In a study by White et al, medical school students received a basic course of MI during their first year of school. Mentors were used in small group discussions and role-play. Their training continued during their third year with more structured training and feedback.⁴⁰ In contrast, the students in this study received less feedback. If students were to receive more training and feedback over a longer period of time, with reinforcements and learning new skills from instructors, it could impact how students would use MI in their patient education. Future long-term studies need to be done to determine what the impact would be. More audio taped sessions with feedback/coaching could produce more of a statistical difference in dental hygiene students' skills.

The study design could have been improved by a larger sample size and a control group. However, it is likely that one session of coaching is not effective in producing MI-proficient students, especially in a setting where faculty are not trained in MI and are not reinforcing it clinically. Future studies should address the questions of how intense or long term the coaching should be, and which environments are needed to produce proficiency.

Conclusion

Dental hygiene students in this study showed improvements in acquiring MI skills following a feedback/coaching session. MI is a useful tool in developing change in patient behaviors. Developing the use of MI skills through implementing educational curriculum changes would have a positive impact upon patient education. The goal of patient education is to have an effect upon behavior. MI provides an important health education strategy when implementing change in patient behavior and would have

a positive effect upon the overall health of individuals.

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