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Increasing Dental Hygienistsâ€™ Confidence in Nutritional Counselling Using Motivational Interviewing: A Pilot Study

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Abstract

Purpose: Dental hygienists have the unique opportunity to educate patients on connections between nutrition and oral health. Dental hygiene students are introduced to these concepts but struggle to gain confidence to share this knowledge with patients. This pilot study looked at an educational module on Motivational interviewing (MI) and an assessment and counselling tool to build student confidence with nutritional counselling.

Methods: Dental hygiene students participated in an educational module to review MI and introduce a nutritional risk assessment and counselling tool. Prior to the module, participants completed a pre-test about confidence levels regarding MI and nutritional counselling. After three weeks of clinical practice, participants completed a post-test. Data was compared for quantitative changes and qualitative themes from responses.

Results: Twenty-two senior dental hygiene students (n=22) participated in both the pre-test and post-test. There were statistically significant changes in participants' confidence (p=0.007) and comfort (p=0.020) discussing nutrition with patients. Participants struggled to become more confident in MI as demonstrated by no significant change in their feelings surrounding MI (p=0.150). Students reporting increased nutritional counselling sessions showed improvement in their confidence.

Conclusion: Introducing MI with an assessment and counselling tool to aid students can improve confidence with nutritional counselling. This type of education may translate into more chair side discussions about nutrition, improving overall patient care.

Keywords: Oral health; Nutrition; Dental hygiene education; Teaching methodology; Motivational interviewing

Introduction

The focus on disease prevention has been in the forefront of modern dentistry; including the more contemporary recognition of the interrelation of oral health and overall health. Nutrition positively or negatively affects health; including oral health. Risks of caries; periodontal disease; and oral cancers can all be impacted by nutrition [1-4]. Oral healthcare providers; including dental hygienists; have a direct effect on the oral health of their patients and a substantial influence on patients' overall health. Dental hygienists understand nutritional education is beneficial for their patients; however; they experience barriers; such as time constraints; lack of confidence; and insufficient knowledge; when it comes to performing nutritional counselling [5]. Dental hygienists and other clinicians also face challenges with patient compliance. Using Motivational Interviewing (MI) to approach topics such as nutritional counselling can provide superior patient outcomes [6]. As MI is practiced and used correctly; dental hygienists may actually reduce some of these barriers as well as see patient improvement.

Nutrition and Oral Health

Nutrition can play a role in oral health in multiple ways. Decay prevention is the most notable. Reducing sugar and fermentable carbohydrate intake can positively affect caries rate in patients [7,8]. These reductions can also have a similar effect on periodontal health [9-11] and systemic health; creating connections between the mouth and the body [12]. While the epidemics of obesity and diabetes in our society compel healthcare providers to consider nutrition [13], dental hygienists have the added necessity due to nutrition's effect on oral health. Nutritional counselling cans "significantly reduce the risk of oral disease" [14]. Dental professionals see patients on a regular basis creating an ideal opportunity to discuss nutrition with patients and educate them on nutrition's connection to teeth and oral health [15,16]. This care can be enhanced through nutrition screenings; evaluating risk factors contributing to caries; periodontal disease; or difficulty healing and making some general suggestions on how to reduce these risks.

Barriers to Nutritional Counselling

Most dental hygienists believe they should actively help patients consider making changes in their diets but admit difficulty discussing nutrition with patients [5,17,18]. Hayes; Wallace et al. [14] examined several barriers that contributed to this lack of chair side nutritional counselling for dental patients; including patient compliance; time; clinician's nutritional knowledge; counselling skills; and confidence. Incorporating ways to reduce these challenges within dental hygiene education could be one approach to eliminating these barriers; namely patient compliance; and clinician confidence.

Creating simple ways to add nutritional counselling to patient care for the dental hygiene student is a crucial way to develop confidence. This; along with consistent practice for the student; provides an adequate

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foundation for nutritional counselling to find a place within the dental hygiene practice of care. Also; developing an approach to nutritional counselling which encourages patient compliance can help eliminate barriers both of the patient and the clinician. Motivational interviewing (MI) can encourage positive change for patients in a friendly and unobtrusive manner. Motivational interviewing is versatile and can be used in a wide range of health care settings; including tobacco cessation; weight management; and other healthy habit interventions [19-21]. The basis of MI is finding the patient's intrinsic motivation and attaching that to the healthy behavior [20]. There are often opposing feelings within the patient about change. Motivational interviewing is designed to help guide patients through this conflict and focus on perception and motivation [22]. The goal must be meaningful to the patient rather than the clinician; relying on "reflective listening and positive feedback for guiding the patient toward change" [20]. This can be challenging to the clinician to perform correctly; but can achieve greater patient success [23]. When dental hygienists find ways to incorporate MI into their interactions with patients; improved conversations about challenging subjects can happen successfully. Simply knowing how to question patients in a way to encourage positivity can impact patient health choices.

This pilot study examined if introducing an assessment and counselling tool to assist dental hygiene students through MI increased their confidence in providing nutritional counselling to their patients. The assessment and counselling tool was developed to guide the student through an MI inspired nutritional counselling session.

Methodology

After approval from XXX University's Institutional Review Board (HS-5836); 39 senior dental hygiene students were invited to participate in the pre-test, post-test study. The study utilized a quasi-experimental; one-group design to gather qualitative and quantitative data to evaluate change in confidence with nutritional counselling after an educational module and use of an assessment and counselling tool. Students willing to participate completed a pre-test to measure current confidence level and experience with nutrition and MI. After a mandatory educational module about nutrition and MI with an introduction to the assessment and counselling tool; the students were asked to practice these skills with their patients for the next three weeks. After the study timeframe; the students were asked to complete a post-test to evaluate if their level of confidence changed.

The assessment and counselling tool was designed to be interactive between the clinician and patient. The study focused on patients with increased caries risk; are diabetic; and/or have undergone periodontal treatment; but could be used with anyone benefiting from improved nutrition. The patient was asked a series of questions using a script in the spirit of MI; shedding light on some of the risks involved with their nutritional choices and encouraging reasonable goals to set. Focusing on simple nutrition changes such as drinking more water; decreasing processed foods and sugar; or increasing fruits and vegetables were valuable initial goals made collaboratively with the patient. The Healthy Eating Plate created by nutrition experts at Harvard's T.H. Chan School of Public Health was the nutritional guide used in the assessment and counselling tool due to its quality components such as choosing whole grains over refined grains; quality proteins other than processed meat; including a variety of fruits and vegetables (not including potatoes or fruit juices); encouraging healthy fats and oils; and opting for water and limiting dairy and milk servings [24].

Results

After the study time frame; the pre-test and post-test results were gathered and compared. Twenty-two students (n=22) completed both pre-test and post-test and age; gender; and education levels were similar to that of other dental hygiene programs. Liker scale data from seven questions as well as qualitative data from three open-ended questions were gathered and analyzed. To evaluate the research questions; the pre-test and post-test answers were matched; and a Wilcoxon signed-rank test conducted to determine if a statistically significant difference occurred using the established significance level $p<0.05$. The qualitative data gathered from the open-ended questions on the post-test was evaluated with content and narrative analysis focusing on themes that were frequently present in students' answers. In addition; students were asked if they increased the frequency of nutritional counselling during patient care after the educational module and instruction on use of the assessment and counselling tool.

When asked if nutrition was currently discussed with their patients; a statistically significant change was noted for the students when compared before and after the module ($p=0.049$). Statistically significant changes were noted as well with comfort ($p=0.020$) and confidence ($p=0.007$) in nutritional counselling. The question regarding confidence in nutritional counselling had the greatest statistical power; which demonstrates the validity of the results. Once MI was mentioned in the questions; the strength in statistical significance dropped. When asked if MI could improve the ability to perform nutritional counselling; fewer students agreed with the statement ($p=0.106$). Similar results occurred when asked about comfort with using MI ($p=0.150$). However; with a p value of approximately 0.1; these results are approaching statistical significance ($p<0.05$). The pre-test and post-test comparison of the one negatively worded question about lacking nutritional education also showed a significant difference ($p=0.012$). The question about dental hygienists in general discussing nutrition with their patients showed no significant difference ($p=0.306$) after the module. Results are summarized.

Participants were asked to reflect on the number of nutritional counselling sessions completed during the three-week study. The majority (68.2%) of participants (n=15) reported an increase in their nutritional counselling sessions compared to their clinical experience prior to the educational module. Of the participants who had a positive change in confidence from pre-test to post-test (n=14); all but three had an increase in the number of nutritional counselling sessions performed (n=11; 78.6%). Two of those participants reported no nutritional counselling sessions for the study time frame.

Data gathered included a series of three qualitative questions in the post-test. These questions discussed barriers; MI and the designed assessment and counselling tool. Thematic analysis of the students' comments identified prominent primary and secondary themes. Comments were evaluated by the PI looking for commonalities; or "patterns of experience" among the students' reactions to the questions. Identical and similar words or phrases mentioned in the comments were identified. Grouping these words and phrases revealed students improved confidence; increased comfort; and had greater alignment with patients' goals [25].

When asked in what ways MI influenced nutritional counselling with their patients; three students (n=3) directly mentioned confidence and comfort with the knowledge gained in the module and experience with the new assessment tool. Seven students (n=7) discussed goal setting and willingness among their patients; including being more

open with and focused on the patients' desires. One student (n=1) mentioned patients seemed more comfortable with this approach. Students also explained the barriers they experienced when attempting nutritional counselling with their patients. The main barrier involved a lack of patient interest. Only two students (n=2) stated a lack of time while nine (n=9) described the reluctance of patients to discuss nutrition. Finally; when asked specifically about the assessment and counselling tool students reported the ease and effectiveness of the tool. Of the 14 responses (n=14) for this question; 100% were positive and half of those responses (n=7) mentioned the ease of the counselling tool. Table II provides examples of student responses to the open-ended questions in the post-test.

Discussion

Nutrition can be an important yet delicate subject to examine with patients. All but one student (n =21) agreed or strongly agreed in the pre-test with the statement "A dental hygienist should discuss nutrition with his/her patient" and that student strongly agreed in the post-test. Students demonstrated no statistical change regarding their feelings about nutrition's place in dental hygiene care. Research agrees with this and establishes that dental hygienists know nutrition is important for oral health [5,17,18]. However; when asked if the student currently discussed nutrition with his/her patients there was a statistically significant change (p=0.049) after the educational module and practice with the assessment and counselling tool. There was a positive change in current nutrition discussions from the students attending the module and utilizing the tool; showing more nutritional counselling sessions happening among students. The nutritional counselling exposure to the students during the educational module could have made students more sensitive to chair side opportunities to discuss nutrition with their patients. This demonstrates the need for more exposure not only for dental hygiene students but also practicing clinicians through continuing education opportunities who may need more nutrition education and experience.

When asked about comfort level and confidence in nutritional counselling; students demonstrated a significant increase in both (p=0.020 and p=0.007; respectively). When asked about a lack of nutritional training; fewer students felt inadequately educated after the module (p=0.012). Through the educational module; introduction of the assessment and counselling tool; and practice using the tool with patients; students were able to increase their confidence with nutritional counselling. Some of their confidence may have resulted from being in the last semester of their dental hygiene education with some past nutritional counselling and MI experience as well as a greater overall confidence in patient care. Introducing nutritional counselling and MI skills early in curriculum could increase the opportunities to practice and gain more confidence. Introducing concepts; particularly around MI; even during prerequisite courses could positively influence students' confidence with these challenging skills. Gaining this confidence early could be instrumental in these skills being maintained throughout one's career. Ultimately; this would mean greater patient care and improved health for individuals; societies; and beyond.

The final two Liker scale questions included MI and neither showed statistical significance. This was not surprising as MI is a difficult skill to master and being comfortable and confident with this skill is challenging; even for seasoned clinicians [19,26]. However; both questions had a p value of just over 0.10 which shows approaching statistical significance of $p<0.05$. This could signify that with greater emphasis on MI skills and practice; comfort and confidence could improve. The educational module presented to the students was only one hour in duration. Research indicates MI is a skill that takes a significant amount of time to master [19,26]. Despite the role play during the educational module and the experiences with patients during the study time period; MI requires continual training and reinforcement [19,23,27]. Furthermore; using MI as a mode to deliver nutritional counselling can be more effective in creating lasting changes for the patient that will improve patient health more quickly [6,19,23,28]. Completing nutritional counselling with patients is certainly more rewarding when improvements are seen. When positive results are observed with patients; clinicians are more likely to continue with nutritional counselling with other patients. This may not have been appreciated by the students in the short time frame of the study. Incorporating these concepts and approaches early in education provides more time for students to practice and build confidence. The more confidence is built within educational settings; the greater chance for the clinician to continue with these practices beyond graduation. Also; practicing clinicians are able to maintain a more long term relationship with their patients leading to a greater chance of building confidence as patient health improvement is witnessed.

Most of the participants (n=15; 68.2%) reported an increase in their nutritional counselling sessions. Experience with nutritional counselling sessions was an important way to increase confidence. Of the participants claiming a positive change in their confidence in nutritional counselling from pre-test to post-test; all but three (n=11; 78.6%) had an increase in the number of nutritional counselling sessions reported during the study period. As the students used the assessment and counselling tool to evaluate and discuss nutrition with their patients; they gained confidence through each experience. Continuing education could reinforce these skills for graduates as well as expose practicing clinicians with new ideas to treat the whole patient.

A holistic approach to the dental hygiene process of care should include nutritional counselling. Interprofessional collaboration could support this concept. Learning to treat patients as a whole team can be powerful. Dental hygienists cannot replace the important role nutrition experts provide for patients' dietary needs. Developing curriculum to include interprofessional education with dieticians; physician assistants; nurses; and resident physicians could be a ground-breaking way to integrate MI into several aspects of health; including nutrition. Incorporating all areas of healthcare demonstrates how practitioners work together to create the best care for the patient and nutrition is one area that directly affects each healthcare provider in a direct way. This; along with other research topics; can provide evidence for the need to increase medical-dental integration to treat patients as a whole and improve overall health exponentially.

The most enlightening evidence from this study came from the students' answers to the open-ended questions at the end of the post-test (Table 2). The first question discussed ways MI influenced nutritional counselling with patients. Despite MI being a difficult skill; the overall comments were positive. Three students directly mentioned confidence and comfort which is a direct reflection on the research questions. Another student mentioned "Feeling more open to discussing their nutrition" which could show an increase in confidence. An interesting and unexpected theme noted was goal setting with patients. Two students specifically mentioned goals and several others discussed the willingness of patients. Building on these positive experiences could be instrumental in these students using these skills beyond graduation. These generally positive comments indicate with more experience and education; students could gain more confidence to use MI effectively

with patients. Further; more education and exposure to practicing clinicians could enhance patient care outside of the educational setting and for those not exposed to these concepts while in school.

Barriers were the topic of the second open-ended question. Not surprising; insufficient time was a barrier to nutritional counselling. Based on similar research; this was a common barrier to nutritional counselling [5,14]. However; in this study; time was not as frequently mentioned as expected. This could be as students tend to have extra patient time waiting for faculty. Lack of patient interest or willingness was a greater barrier; mentioned by nine (n=9; 40.9%) students. While this was unexpected; in the research patient compliance was another top barrier along with time [14]. Limited positive experiences with nutritional counselling could have long term negative effects on students pursuing nutritional counselling further in their career. Encouraging nutritional counselling early in dental hygiene education and helping students to understand the complexity of the subject could create more willingness to continue pursuing nutritional counselling in their career. More research is needed to explore the notion of using MI for nutritional counselling among practicing dental hygienists; including how to educate clinicians on these concepts.

The final open-ended question reviewed the assessment and counselling tool. All fourteen (n=14) comments from students were positive. Students felt the tool was simple and easy to follow; guided the conversations appropriately and efficiently; and "increased [their] ability to talk with patients." Also; it was easy to save data and create an electronic health record for nutritional counselling performed with the patient. Further; it could be printed or emailed to the patient for a home reference of the goals discussed. The assessment and counselling tool provided a step-by-step way to approach nutritional counselling and could reinforce nutritional counselling and MI skills for future use. Especially for students learning the steps of MI and becoming more comfortable and confident in nutritional counselling; using a tool like the one developed for this study can help reinforce these concepts. While the tool may not be as useful for practicing clinicians; the idea of using MI for nutritional counselling can still be approached with the tool in mind. This could continue to support a holistic approach to oral and overall health.

Conclusion

As obesity rates climb; diabetes escalates; and other diet related health concerns heighten; the need for nutritional counselling is evident. Since oral health is related to diet as well; dental hygienists are in a unique position to educate their patients about nutrition to increase oral health as well as overall health. However; this has historically been challenging for dental hygienists. With the recent health issues emerging with COVID-19; it is apparent immune systems are as important as ever. Quality nutrition can fortify one's immune system and dental hygienists can help educate their patients about the implications of nutrition on oral health and beyond [29]. Educating our dental hygiene students on nutritional counselling could broaden the scope of healthcare providers having an influence on patients. This research demonstrated the importance of laying a foundation in dental hygiene education of using MI to complete nutritional counselling. While limitations are present due to small convenience sample; there is potential for advances in nutritional counselling incorporation in dental hygiene training that could enhance the students' education and improve the clinical care of patients. Furthermore; utilizing an assessment and counselling tool can be instrumental in building our future healthcare providers' confidence. Ultimately; this can lead to increased patient care and overall health. Healthcare is multifaceted. Open communication with patients and other healthcare providers about nutrition can affect all aspects of health. By intertwining the care we give to patients through interprofessional experiences; we can create the optimal care for patients.

Disclosures

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