Motivational Interviewing Confidence and Perceived Competence Among Undergraduate and Graduate Dietetics Students

Journal of Medical Education and Curricular Development
Volume 8: 1–8

DOI: 10.1177/23821205211052418
SAGE

Mateja R. Savoie-Roskos and Katie N. Brown
Utah State University, Logan, UT, USA.

ABSTRACT

BACKGROUND: Motivational interviewing (MI) aligns with the scope of practice and competency standards for Registered Dietitian Nutritionists; however, few dietitians receive adequate training. Furthermore, little is known about MI training within dietetics curricula.

OBJECTIVE: The objective of this study was to determine differences in undergraduate and graduate-level dietetics students' confidence and perceived competence before/after taking a MI course.

METHODS: A 38-item pre–postsurvey was completed by students enrolled in a Basic and Advanced MI course at Utah State University. The survey included demographic questions and questions related to confidence and perceived competence using MI techniques. Paired *t*-tests were used to compare pre/post results and analysis of variance was used to compare groups.

RESULTS: Increased confidence and perceived competence were observed for Basic MI students (n = 72) ($P < .0001$) and Advanced MI students (n = 32) ($P < .0001$) after course completion. In the presurvey, Advanced MI students had higher confidence in 5 of 14 MI skills, higher competence in 2 of 11 MI skills, and higher overall MI competence scores ($P = .008$) than Basic MI students. Following completion of the course, Advanced MI students had higher overall MI confidence scores ($P = .03$).

CONCLUSIONS: Students' confidence and perceived competence with using MI increased after taking a college-level MI course. Incorporating MI courses into dietetics curricula may be an effective way to increase confidence and perceived competence of using MI techniques and therefore improving communication between dietitians and patients.

KEYWORDS: Education, graduate, dietetics, counseling, motivational interviewing

RECEIVED: July 29, 2021. **ACCEPTED:** September 22, 2021

TYPE: Original Research

FUNDING: The authors received no financial support for the research or authorship of this article. Publication was supported in part by the Utah State University Libraries' Open Access Funding.

DECLARATION OF CONFLICTING INTERESTS: The authors declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

CORRESPONDING AUTHOR: Katie N. Brown, Department of Nutrition, Dietetics and Food Sciences, Utah State University, 8700 Old Main Hill, Logan, UT 84322-8700, USA. Email: Katie.brown@usu.edu

Introduction

Motivational interviewing (MI) is a client-centered, goal-oriented counseling approach based on collaboration and compassion with a focus on internal motivation and the alignment of personal values with behavior change.[1,2] Although MI has been used for many years among mental health professionals, the use of MI is still newer to the field of dietetics.[3] Historically, dietitians were trained using a practitioner-centered approach that included giving nutrition advice, establishing goals for clients, and in general, directing the conversation.[3] Although this communication approach can work for a select few individuals, it is typically met with resistance, which can negatively impact rapport and client outcomes.[3] Conversely, MI-based counseling has been found to improve intrinsic motivation, reduce ambivalence, and improve certain nutrition-related outcomes among clients.[4–7] Furthermore, MI aligns with the scope of practice and competency standards for Registered Dietitian Nutritionists (RDN) making it an approved style of counseling for RDNs to use in practice.[3] However, very few RDNs receive an adequate amount of practice-based MI training in their undergraduate or graduate programs.[8] This is especially true considering that short webinars and seminars are likely insufficient for becoming competent in MI.[3,9,10]

With experiential learning being a primary component of dietetics education, there is an opportunity for integrating more practice-based MI training into dietetics curricula.[11–13] Experiential learning opportunities allow for students to gain hands-on experiences while receiving immediate feedback from supervising RDNs and reflecting upon their learning experiences.[13,14] This process has been found to promote skill development, confidence, and increased professional identity among dietetic students.[12,14] Incorporating MI-based counseling as an experiential learning opportunity may be especially important to allow students to practice interpersonal communication and receive feedback to help them hone their skill set.[13,14]

Limited research exists on the impact of college-level MI courses on confidence and perceived competence of undergraduate dietetics students and RDNs in graduate programs.[8,15]

The objectives of this study were to (1) determine changes in students' confidence, perceived competence, and interest in MI before and after taking a college course on MI-based counseling, and (2) compare confidence, perceived competence, and interest in MI between students who took a Basic and Advanced MI Course.

Methods

MI-Based Counseling Curriculum

Dr. Savoie-Roskos provided 2 nutrition counseling courses, 1 of which was taught to junior level dietetics students (referred to as the Basic MI Course) and one for senior level dietetics students and graduate students (referred to as the Advanced MI Course). Dietetic students in both the Coordinated Program in Dietetics and Didactic Program in Dietetics at Utah State University (USU) were required to take the Basic MI Course as part of their dietetics curricula. The Advanced MI Course was offered as an elective to senior dietetics students interested in further development of their MI skill set. Graduate students who took the Advanced MI Course were primarily RDNs working towards various graduate degrees. The professor who taught these courses is extensively trained and has been using MI in practice for over 10 years. Professor proficiency of MI is known to be essential for effective MI training.[8]

The Basic MI Course provided students with 6-weeks of face-to-face didactic training, in addition to experiential learning outside the classroom. The didactic training included in-person lectures, discussion of counseling scenarios, role playing with classmates, watching and analyzing MI-based nutrition counseling sessions, readings, and more. The experiential learning aspect of the course required students to record themselves conducting 2 counseling sessions (one 35-45 min initial session and one 15-20 min follow-up session) with a client. The students received detailed time-stamped feedback on each recorded session from the professor. The feedback provided included strengths, areas of improvement, and general comments. A peer evaluation, 2 self-evaluations, and 2 self-reflection papers were also required.

The Advanced MI Course provided students with a full semester (15 weeks) of MI training that advanced upon the content within the Basic MI Course. This course was offered completely online although many of the didactic training techniques were similar to those previously listed. Students in this course were required to record themselves conducting 4 counseling sessions (2, 35-45 min sessions and 2, 15-20 min sessions) with 2 different clients. Professor feedback was provided in the same manner as previously mentioned. Additional course assignments included 2 peer evaluations, 2 reflection papers, weekly quizzes, and weekly online discussions.

Students in both courses were responsible for finding their own clients with basic nutrition concerns. Clients were screened by the professor prior to the initial sessions to ensure their nutrition concerns were appropriate for the training level of the students. Clients in both courses were asked to sign a consent form that indicated they agreed to allow the sessions to be recorded and viewed by the student, professor, and 1 peer.

Survey Tool

For a 3-year period (2018-2020), students enrolled in the 2 previously mentioned MI-based courses were invited to participate in an online pre/postsurvey at the beginning and end of the semester. The 38-item survey included questions about demographic characteristics, prior experience with MI (7 questions), attitudes towards MI (4 questions), confidence using various MI macro- and micro-skills (16 questions: 14 general, and 2 case examples), and perceived competence using various MI macro- and micro-skills (11 questions). This survey was based on a survey developed by Widder-Prewett et al.[16] The questions/responses used in this study were modified slightly, with written permission from the authors, due to feedback received in the pilot test, as described below. For example, most questions in this study used a 7-point Likert scale ranging from "strongly disagree" (1) or 'very unconfident" (1) to "strongly agree" (7) or "very confident" (7) whereas a 6-point scale was exclusively used in the survey developed by Widder-Prewett et al.[16] The topic of the case studies was also modified to better align with knowledge of dietetics students and RDNs. For example, instead of including case studies on smoking cessation and hypertension, the case studies focused on type 2 diabetes and weight loss.

The survey was pilot tested to determine face validity with the target population. Students (n = 12; 100% response rate) enrolled in the Advanced MI Course in the fall of 2017 were asked to participate in the pilot test. In addition to asking the survey questions similar to as previously described, researchers asked 8 questions to determine how students felt about the content, layout, and wording of the instructions and questions. For example, questions included "What questions, if any, were confusing? Please indicate what might make the questions easier to understand." and "Please include any additional feedback or suggestions of how this survey could be improved to ensure accurate information is collected from future students." A few students mentioned that 2 specific questions seemed redundant so one of those questions was removed from the final survey. Other students suggested bolding key information in the instructions and questions, which was also updated in the final version of the survey. Lastly, 1 student expressed the desire to respond neutrally in selecting Likert scale questions. A neutral response option was added to the Likert scales as a result.

Before participating in the study and gaining access to the Qualtrics survey, students were provided with a copy of a Letter of Information describing study procedures, as well as

Table 1. Comparison of Motivational Interviewing Confidence and Perceived Competence of Dietetics Students (n = 72) in a Basic Motivational Interviewing Course.

	n	Mean ± SD Pre	Mean ± SD Post	*P* value
MI confidence				
Confidence in counseling a patient with uncontrolled type 2 diabetes using MI	71	3.11 ± 1.01	4.55 ± 0.81	<.0001
Confidence in ability to help client to become motivated to lose weight using MI	71	3.20 ± 1.05	4.59 ± 0.71	<.0001
Use silence as a tool to get clients to share more	72	4.5 ± 1.47	5.38 ± 0.99	<.0001
Maintain appropriate eye contact with clients	71	5.25 ± 1.25	6.18 ± 0.98	<.0001
Use MI techniques in practice	71	3.83 ± 1.45	5.70 ± 0.80	<.0001
Express empathy with clients	71	5.82 ± 0.87	6.27 ± 0.77	<.0001
Avoid arguing with clients	71	5.78 ± 1.02	6.31 ± 0.83	<.0001
Roll with client resistance	72	4.31 ± 1.17	5.26 ± 0.90	<.0001
Support client self-efficacy	71	4.96 ± 1.08	5.94 ± 0.74	<.0001
Elicit change talk	71	4.03 ± 1.23	5.35 ± 1.12	<.0001
Follow the client's agenda	71	4.61 ± 1.25	5.83 ± 0.79	<.0001
Ask permission before sharing information	72	5.44 ± 1.23	6.01 ± 1.04	.001
Help clients set SMART goals	72	5.57 ± 1.10	6.26 ± 0.86	<.0001
Ask open-ended questions	71	5.13 ± 1.23	6.07 ± 0.90	<.0001
Use reflective listening	71	5.32 ± 1.23	6.11 ± 0.80	<.0001
Assess a client's readiness for change	72	4.56 ± 1.15	5.56 ± 0.93	<.0001
MI confidence score[a]	66	4.95 ± 0.72	5.90 ± 0.46	<.0001
MI competence				
It is easy to show an interest in what a client is saying	72	5.86 ± 0.68	6.42 ± 0.58	<.0001
It is easy to use reflective listening	72	5.12 ± 1.01	5.81 ± 1.04	<.0001
It is difficult to collaborate with a patient	67	3.98 ± 1.13	4.70 ± 1.54	.001
It is difficult to accept that the client might choose not to change	71	3.12 ± 1.41	3.48 ± 1.41	.047
It is easy to ask permission to share	72	5.10 ± 1.24	5.64 ± 1.37	.004
It is difficult to affirm a client	70	4.13 ± 1.18	4.86 ± 1.47	<.0001
It is easy to emphasize the client's control over the agenda and action plan	72	4.83 ± 1.13	5.51 ± 0.98	<.0001
It is easy to express support for a client	72	5.88 ± 0.77	6.17 ± 0.67	.001
It is easy to avoid arguing with a client	72	5.36 ± 1.44	6.0 ± 0.98	.001
It is difficult to ask open ended questions	72	4.14 ± 1.53	5.08 ± 1.66	<.0001
It is easy to reflect back to a patient a summary of what they are saying	72	5.07 ± 1.17	5.58 ± 1.30	.005
MI competence score[b]	62	4.79 ± 0.55	5.405 ± 0.52	<.0001

Abbreviations: SD, standard deviation; MI, motivational interviewing; statistical significance at $P < .05$.
[a]MI confidence score was calculated by averaging the individual responses of the 14 MI confidence questions.
[b]MI competence score was calculated by first reverse scoring questions that were phrased "It was difficult to…", and then averaging the 11 competence questions.
Differences in presurvey and postsurvey responses were calculated using paired *t*-tests.
Coding of the Likert scale questions are as follows: strongly disagree/very unconfident = 1, disagree/unconfident = 2, somewhat disagree/somewhat unconfident = 3, neither disagree or agree/neither unconfident or confident = 4, somewhat agree/somewhat confident = 5, agree/confident = 6, strongly agree/very confident = 7.

risks and benefits of participating in the study. Students in each course and those in the pilot study were provided with 0.5% (3 points) extra credit for participating in each survey (pre and post). The USU Institutional Review Board classified this study as exempt (Protocol #9114).

Statistical Analysis

Frequencies were calculated for categorical data while means and standard deviations were analyzed for continuous data. An MI confidence score was calculated by averaging the individual responses of the 14 general MI confidence questions. A perceived MI competence score was calculated by first reverse scoring questions that were phrased "It was difficult to…", and then averaging the 11 competence questions. Differences in average pre and postsurvey responses were assessed using paired *t*-tests. Differences between participants' responses in

Table 2. Comparison of Motivational Interviewing Interest, Confidence, and Perceived Competence of Students (n = 32) in an Advanced Motivational Interviewing Course.

	n	Mean ± SD Pre	Mean ± SD Post	*P* value
MI confidence				
Confidence in counseling a patient with uncontrolled type 2 diabetes using MI	32	4.0 ± 1.05	5.0 ± 0.62	.011
Confidence in ability to help client to become motivated to lose weight using MI	32	3.84 ± 0.88	4.78 ± 0.87	<.0001
Use silence as a tool to get clients to share more	32	4.56 ± 1.16	5.03 ± 1.26	.096
Maintain appropriate eye contact with clients	32	6.03 ± 0.86	6.47 ± 0.57	<.0001
Use MI techniques in practice	31	4.90 ± 1.22	6.23 ± 0.72	<.0001
Express empathy with clients	32	6.06 ± 0.91	6.44 ± 0.62	.026
Avoid arguing with clients	32	6.25 ± 0.76	6.56 ± 0.56	.023
Roll with client resistance	32	4.75 ± 1.24	5.75 ± 0.76	<.0001
Support client self-efficacy	31	5.03 ± 1.05	6.19 ± 0.60	<.0001
Elicit change talk	32	4.66 ± 1.23	5.66 ± 0.97	<.0001
Follow the client's agenda	32	5.22 ± 0.94	6.16 ± 0.72	<.0001
Ask permission before sharing information	32	5.47 ± 1.34	6.38 ± 0.71	<.0001
Help clients set SMART goals	32	5.53 ± 1.24	6.53 ± 0.62	<.0001
Ask open-ended questions	32	5.59 ± 1.24	6.25 ± 0.92	.012
Use reflective listening	32	5.56 ± 0.91	6.38 ± 0.61	<.0001
Assess a client's readiness for change	32	5.16 ± 1.22	5.94 ± 0.72	<.0001
MI confidence score[a]	30	5.26 ± 0.67	6.14 ± 0.40	<.0001
MI competence				
It is easy to show an interest in what a client is saying	31	5.94 ± 0.96	6.39 ± 0.50	.006
It is easy to use reflective listening	32	5.50 ± 0.72	5.94 ± 0.98	.21
It is difficult to collaborate with a patient	32	4.75 ± 1.46	5.78 ± 0.98	<.0001
It is difficult to accept that the client might choose not to change	32	3.53 ± 1.52	4.78 ± 1.62	<.0001
It is easy to ask permission to share	32	5.09 ± 1.49	5.69 ± 1.49	.089
It is difficult to affirm a client	31	4.81 ± 1.42	5.58 ± 1.19	.005
It is easy to emphasize the client's control over the agenda and action plan	31	5.06 ± 1.03	5.55 ± 1.01	.070
It is easy to express support for a client	31	6.13 ± 0.76	6.35 ± 1.02	.229
It is easy to avoid arguing with a client	30	5.83 ± 1.05	6.27 ± 0.87	.035
It is difficult to ask open ended questions	31	4.67 ± 1.66	5.41 ± 1.50	.002
It is easy to reflect back to a patient a summary of what they are saying	31	5.23 ± 1.48	5.52 ± 1.18	.354
MI competence score[b]	30	5.07 ± 0.56	5.71 ± 0.54	<.0001

Abbreviations: SD, standard deviation; MI, motivational interviewing; statistical significance at $P < .05$

[a]MI confidence score was calculated by averaging the individual responses of the 14 MI confidence questions.

[b]MI competence score was calculated by first reverse scoring questions that were phrased "It was difficult to…", and then averaging the 11 competence questions. Differences in presurvey and postsurvey responses were calculated using paired *t*-tests.

Coding of the Likert scale questions are as follows: strongly disagree/very unconfident = 1, disagree/unconfident = 2, somewhat disagree/somewhat unconfident = 3, neither disagree or agree/neither unconfident or confident = 4, somewhat agree/somewhat confident = 5, agree/confident = 6, strongly agree/very confident = 7.

the 2 courses were calculated using a one-way analysis of variance and chi-squared distributions. To avoid duplication, students who completed surveys for both courses were excluded from the comparative analyses. SPSS (Version 26, 2019, IBM Corp) was used for all statistical analyses.[17] Significance was accepted at a level of $P < .05$.

Results

Seventy-two students in the Basic MI Course and 32 students in the Advanced MI Course took both the pre and postsurveys, a response rate of 86% and 84%, respectively. After excluding duplicates, a sample size of 75 students (56 from the Basic MI Course and 19 from the Advanced MI Course) was used for the comparative analysis.

The majority of the participants (95.1%) were female and reported White/Caucasian as their primary race (95.1%). Students in the Basic MI Course were significantly younger

Table 3. Comparison of Motivational Interviewing Interest, Confidence, and Perceived Competence Between Students (N = 75) in a Basic (n = 56) and Advanced (n = 19) Motivational Interviewing Course.

	n	Time point	Basic MI Course		Advanced MI Course		*P* value
			n	Mean ± SD	n	Mean ± SD	
MI confidence							
Confidence in counseling a patient with uncontrolled type 2 diabetes using MI	75	Pre	56	3.21 ± 1.02	19	4.32 ± 0.95	<.001
	75	Post	56	4.57 ± 0.81	19	5.0 ± 0.67	.040
Confidence in ability to help client to become motivated to lose weight using MI	75	Pre	56	3.21 ± 1.12	19	4.0 ± 0.94	.007
	75	Post	56	4.64 ± 0.67	19	5.05 ± 0.71	.026
Use silence as a tool to get clients to share more	75	Pre	56	4.48 ± 1.51	19	4.68 ± 1.16	.597
	75	Post	56	5.43 ± 0.91	19	5.16 ± 1.39	.334
Maintain appropriate eye contact with clients	75	Pre	56	5.41 ± 1.22	19	6.21 ± 0.18	.009
	74	Post	55	6.24 ± 1.02	19	6.58 ± 0.51	.165
Use MI techniques in practice	73	Pre	55	3.93 ± 1.39	18	5.06 ± 1.35	.004
	75	Post	56	5.79 ± 0.68	19	6.32 ± 0.67	.004
Express empathy with clients	75	Pre	56	5.82 ± 0.92	19	6.37 ± 0.76	.022
	75	Post	56	6.38 ± 0.75	19	6.53 ± 0.61	.431
Avoid arguing with clients	75	Pre	56	5.71 ± 1.07	19	6.37 ± 0.68	.015
	75	Post	56	6.41 ± 0.68	19	6.47 ± 0.61	.722
Roll with client resistance	75	Pre	56	4.32 ± 1.22	19	4.84 ± 1.34	.122
	75	Post	56	5.34	19	5.74	.113

(continued)

Table 3. Continued.

	n	Time point	Basic MI Course		Advanced MI Course		*P* value
			n	Mean ± SD	n	Mean ± SD	
				± 0.87		± 0.81	
Support client self-efficacy	74	Pre	56	5.05 ± 1.09	18	5.33 ± 1.03	.339
	75	Post	56	6.02 ± 0.73	19	6.26 ± 0.56	.184
Elicit change talk	74	Pre	55	4.18 ± 1.32	19	4.74 ± 1.33	.119
	75	Post	56	5.54 ± 1.03	19	5.84 ± 0.83	.244
Follow the client's agenda	75	Pre	56	4.59 ± 1.3	19	5.16 ± 1.12	.091
	75	Post	56	5.86 ± 0.75	19	6.21 ± 0.79	.84
Ask permission before sharing information	75	Pre	56	55 ± 1.21	19	5.53 ± 1.50	.937
	75	Post	56	6.13 ± 0.90	19	6.37 ± 0.68	.283
Help clients set SMART goals	75	Pre	56	5.66 ± 1.00	19	5.63 ± 1.21	.917
	75	Post	56	6.34 ± 0.75	19	6.53 ± 0.61	.328
Ask open-ended questions	74	Pre	56	5.22 ± 1.17	19	5.74 ± 1.05	.91
	75	Post	56	6.11 ± 0.90	19	6.42 ± 1.02	.233
Use reflective listening	74	Pre	55	5.47 ± 1.10	19	5.68 ± 0.95	.485
	75	Post	56	6.16 ± 0.83	19	6.47 ± 0.61	.134
Assess a client's readiness for change	75	Pre	56	4.61 ± 1.14	19	5.32 ± 1.06	.020
	75	Post	56	5.75 ± 0.77	19	6.00 ± 0.75	.221

(continued)

Table 3. Continued.

	n	Time point	Basic MI Course		Advanced MI Course		*P* value
			n	Mean ± SD	n	Mean ± SD	
MI confidence score[a]	70	Pre	53	5.02 ± 0.72	17	5.41 ± 0.70	.050
	74	Post	55	5.97 ± 0.42	19	6.21 ± 0.40	.032
MI competence							
It is easy to show an interest in what a client is saying	75	Pre	56	5.91 ± 0.70	19	5.84 ± 1.02	.743
	75	Post	56	6.48 ± 0.54	18	6.33 ± 0.49	.301
It is easy to use reflective listening	75	Pre	56	5.20 ± 0.92	19	5.58 ± 0.77	.109
	75	Post	56	5.95 ± 0.94	19	6.11 ± 0.81	.514
It is difficult to collaborate with a patient	74	Pre	55	4.07 ± 1.15	19	4.78 ± 1.30	.038
	72	Post	53	4.79 ± 1.62	19	5.63 ± 1.17	.042
It is difficult to accept that the client might choose not to change	75	Pre	56	3.14 ± 1.47	19	3.73 ± 1.56	.138
	74	Post	55	3.5 ± 1.51	19	4.84 ± 0.177	.002
It is easy to ask permission to share	75	Pre	56	5.23 ± 1.21	19	5.37 ± 1.34	.680
	75	Post	56	5.79 ± 1.22	19	5.63 ± 1.64	.665
It is difficult to affirm a client	75	Pre	56	4.07 ± 1.23	19	5.05 ± 1.40	.005
	73	Post	55	4.91 ± 1.40	18	5.77 ± 1.22	.021
It is easy to emphasize the client's control over the agenda and action plan	75	Pre	56	4.96 ± 1.11	19	4.95 ± 1.22	.956
	74	Post	56	5.48 ± 1.00	18	5.33 ± 1.3	.608
It is easy to express support for a client	75	Pre	56	5.88 ± 0.74	19	6.21 ± 0.71	.089
	74	Post	56	6.27 ± 0.65	18	6.44 ± 1.20	.425
It is easy to avoid arguing with a client	75	Pre	56	5.34 ± 1.35	19	6.00 ± 0.94	.053
	72	Post	55	6.07 ± 1.02	17	6.12 ± 0.93	.871
It is difficult to ask open ended questions	75	Pre	56	4.19 ± 1.58	19	4.84 ± 1.57	.127
	74	Post	56	5.17 ± 1.60	18	5.83 ± 1.43	.125
It is easy to reflect back to a patient a summary of what they are saying	75	Pre	56	5.13 ± 1.16	19	5.63 ± 1.21	.108
	74	Post	56	5.68 ± 1.30	18	5.56 ± 1.10	.708
MI competence score[b]	74	Pre	55	4.83 ± 0.55	19	5.27 ± 0.74	.008
	67	Post	50	5.47 ± 0.52	17	5.71 ± 0.57	.107

Abbreviations: SD, standard deviation; MI, motivational interviewing; statistical significance at $P < .05$.
[a]MI confidence score was calculated by averaging the individual responses of the 14 MI confidence questions.
[b]MI competence score was calculated by first reverse scoring questions that were phrased "It was difficult to…", and then averaging the 11 competence questions. Differences between participants' responses were calculated using a one-way analysis of variance.
Coding of the Likert scale questions are as follows: strongly disagree/very unconfident = 1, disagree/unconfident = 2, somewhat disagree/somewhat unconfident = 3, neither disagree or agree/neither unconfident or confident = 4, somewhat agree/somewhat confident = 5, agree/confident = 6, strongly agree/very confident = 7.

than students in the Advanced MI Course (23 ± 2.18 and 32.84 ± 11.22 years, respectively, $P < .001$). Furthermore, a significant difference in baseline MI training and knowledge was found when comparing students in the Basic MI Course to the Advanced MI Course (6.3% and 45.1%, respectively, $P = .016$).

Basic MI Course Pre–Post Results

In general, students in the Basic MI Course (n = 72) reported being interested in learning about MI, planned to use MI in

their future practice, and viewed MI as an effective tool for eliciting behavioral changes in patients. There was a statistically significant decrease in interest in learning about MI (6.65 ± 0.59 and 6.42 ± 0.76, respectively, $P = .025$), and a significant increase in the level at which students felt that MI would not be useful in their future career (1.18 ± 4.2 and 1.50 ± 1.26, respectively, $P = .049$) from pre to postsurvey. However, significant increases in confidence and perceived competence were found for all MI skills from pre to postsurvey (Table 1). Furthermore, the MI confidence score significantly increased from presurvey to postsurvey (4.95 ± 0.72 to 5.90 ± 0.46, respectively, $P < .001$), as did the MI competence score (4.79 ± 0.55 to 5.40 ± 0.52, respectively, $P < .001$).

Advanced MI Course Pre–Post Results

Similarly, students in the Advanced MI Course (n = 32) reported high levels of interest in MI and intention to use MI in their future practice. In addition, students in this course viewed MI as an effective tool for eliciting behavioral change in patients. No significant changes were found in these measures from presurvey to postsurvey. Significant increases were found in students' confidence (13 of 14 MI skills) and perceived competence (6 of 11 MI skills) (Table 2). Significant increases in the MI confidence score (5.26 ± .67 to 6.14 ± 0.40, respectively, $P < .001$) and the MI competence score (5.07 ± 0.56 to 5.71 ± 0.54, respectively, $P < .001$) were also observed from presurvey to postsurvey.

Comparison Between Courses

When comparing results between courses (n = 75), students in the Basic MI Course more strongly disagreed that MI would be not useful for their future careers compared to students in the Advanced MI Course (1.13 ± 0.39 and 1.84 ± 1.86, respectively, $P = .009$). There were no other differences in interest in MI when comparing students in each course. In the presurvey, students in the Advanced MI Course had significantly higher confidence in 5 of 14 MI skills, higher perceived competence in 2 of 11 MI skills, and higher overall MI competence scores (5.27 ± 0.07 and 4.83 ± 0.55, respectively, $P = .008$) as compared to students in the Basic MI Course. There was, however, no significant difference in overall MI confidence scores between the 2 groups in the presurvey (Table 3). In the postsurvey, Advanced MI students reported higher confidence for 1 of 14 MI skills, higher perceived competence in 3 of 11 MI skills, and higher overall MI confidence scores (6.21 ± 0.40 and 5.97 ± 0.42, respectively, $P = .032$) (Table 3).

Discussion

This study assessed changes in students' MI interest, confidence, and perceived competence from the beginning to the end of 2 MI-based courses at USU. In addition, MI interest, confidence, and perceived competence of students in a Basic MI Course was compared to students in an Advanced MI Course. Findings of this study suggest that students' confidence in applying MI techniques increased, as did their perceived competence, after taking the MI courses. Students in the Basic MI Course increased confidence and perceived competence for all MI skills while students in the Advanced MI Course increased confidence and perceived competence for the majority of MI skills. Surprisingly, higher levels of confidence and perceived competence were not observed for all skills among students in Advanced MI Course. However, students in this course did have higher overall MI confidence scores following the completion of the course than did Basic MI students.

Although they were provided with over double the training (15-weeks compared to 6-weeks), students in the Advanced MI Course did not have significantly higher perceived competence at the postsurvey than students in the Basic MI Course. In the study by Miller and Mount, participants reported significant improvements in MI knowledge and perceived proficiency after a 2-day workshop that provided ~15 h of didactic and hands-on learning, as well as instructor feedback.[9] Considering this, it is possible that a plateau effect occurred among students in the Advance MI course. The lack of difference observed may have also been difficult to detect due to the nonstandardized experiences of students in each course. However, higher confidence and perceived competence in some MI skills and the overall MI confidence score suggests continued refinement of MI skills and perceived confidence in using those skills among students in the Advanced MI Course.

It is likely that the combination of additional practice opportunities and instructor feedback offered in the Advanced MI Course contributed to increased student perceived confidence in MI.[8] Miller et al[18] found that a combination of continual individual feedback and follow up mentoring resulted in improved skillfulness among clinicians in a randomized controlled trial (n = 140) as compared to a more self-directed style of MI training.[10,18] The Advanced MI Course was also over double the length of the Basic MI Course. The most effective MI trainings have been found to be longer durations, although no specific amount of training time has been recommended to ensure proficiency.[8,18,19] Both courses incorporated multiple training methods (ie, recorded counseling sessions, instructor and peer feedback, reflection papers, and lectures, among others) which is consistent with the preferred training formats used in previous studies.[19] In fact, comprehensive and intensive training formats, such as those described in this study, are most highly recommended by MI experts.[19]

Although there are many strengths of this study, limitations do exist. Self-reported data was collected in this study which is subjective, increasing the risk for bias and overestimation of perceived competence.[9,10] Previous studies have found that self-perceived proficiency in MI has been overestimated as compared to actual skill level.[9,10] Furthermore, improvements in behaviors from the pre/postsurveys may be as a result of the students' awareness of being studied, and may contribute to an overestimation of study

results. This study was based on a convenience sample and the sample size was limited to the number of students enrolled in the courses during the study period. This study was conducted at one university that applied a specific combination of didactic and experiential learning, which may impact the generalizability of the study results. Lastly, causal inference is limited due to the study design and lack of control group.

Further research is needed to determine the amount and effectiveness of MI training among dietetics students and practicing dietitians. Research on the most effective methods for dietetics students and RDNs to practice and receive feedback on MI skills also warrants further investigation.[8] Furthermore, there is a need to understand the amount of didactic and experiential learning that should be included in MI courses to ensure students receive thorough training and practice to increase competence and confidence using this set of skills.[8] Qualitative analysis of the students' recorded counseling sessions could provide valuable data on the extent to which MI skills improve before and after MI training. A comparison of student perceptions of change in competence compared to a professor's evaluation of their change in competence could also be included in future studies to further validate the subjective results provided by students.

Conclusion

This study investigated the confidence and perceived competence of dietetics students and RDNs enroll in master's programs after taking either an undergraduate or graduate-level MI course at USU. The confidence and perceived competence of students was found to significantly increase for most students and with regards to using most MI techniques. Additional research is needed to further evaluate MI training among dietetics students and practicing dietitians. Incorporating MI training into dietetics curricula may be an effective way for students to improve confidence and perceived competence of select MI techniques and as a result, may improve communication between dietitians and patients in practice. An undergraduate and/or graduate-level course that includes a combination of didactic coursework and experiential learning is one way of providing dietetics students with a structured opportunity to learn and apply MI skills while receiving consistent mentorship and feedback from a trained professor. Undergraduate and graduate programs that train dietitians should consider including an MI-based course in their curriculum to provide students with the opportunity to develop MI skills before entering the field.

Acknowledgments

The authors would like to thank the USU students who participated in this study and the several undergraduate researchers who assisted with data collection.

Ethical Approval

This study was reviewed by the Utah State University Institutional Review Board (IRB). This study was classified as exempt (Protocol #9114). As is consistent with requirements for exempt studies, a Letter of Information was provided to participants explaining the study procedures, as well as potential risks and benefits, and contact information for the PI and IRB. Before accessing the online survey, participants consented to participate by clicking "yes," indicating that they understood the procedures, risks, and benefits, that they asked any questions they might have, and understood the procedures for ending participation in the study.

REFERENCES

1. Miller WR, Rollnick S. *Motivational Interviewing Helping People Change*. 3rd Edition. The Guilford Press; 2002.
2. Clifford D, Curtis L. *Motivational interviewing in nutrition and fitness*. Guilford; 2016.
3. Hollis JL, Williams LT, Collins CE, Morgan PJ. Does motivational interviewing align with international scope of practice, professional competency standards, and best practice guidelines in dietetics practice? *J Acad Nutr Diet*. 2014;114(5):676-686. doi:10.1016/j.jand.2013.12.023
4. Britt E, Hudson SM, Blampied NM. Motivational interviewing in health settings: a review. *Patient Educ Couns*. 2004;53(2):147-155. doi:10.1016/S0738-3991(03)00141-1
5. Campbell MK, Carr C, DeVellis B, et al. A randomized trial of tailoring and motivational interviewing to promote fruit and vegetable consumption for cancer prevention and control. *Ann Behav Med*. 2009;38(2):71-85.
6. Neumark-Sztainer DR, Friend SE, Flattum CF, et al. New moves—preventing weight-related problems in adolescent girls: a group randomized study. *Am J Prev Med*. 2010;39(5):421-432.
7. West DS, DiLillo V, Bursac Z, et al. Motivational interviewing improves weight loss in women with type 2 diabetes. *Diabetes Care*. 2007;30(5):1081-1087.
8. Smart RDHM, Clifford DR, Neyman Morris MR. Nutrition students gain skills from motivational interviewing curriculum. *J Acad Nutr Diet*. 2014;114(11):1712-1713. doi:10.1016/j.jand.2014.04.012
9. Miller W, Mount K. A small study of training in motivational interviewing: does one workshop change clinician and client behavior? *Behav Cogn Psychother*. 2001;29(4):457-471. doi.org/10.1017/S1352465801004064
10. Miller W, Rose G. Toward a theory of motivational interviewing. *Am Psychol*. 2009;64(6):527-537. doi:10.1037/a0016830
11. Eliot KA, Kolasa KM. The value in interprofessional, collaborative-ready nutrition and dietetics practitioners. *J Acad Nutr Diet*. 2015;115(10):1578. doi:10.1016/j.jand.2015.03.025
12. Barr AB, Walters MA, Hagan DW. The value of experiential education in dietetics. *J Am Diet Assoc*. 2002;102(10):1458-1460. doi:10.1016/S0002-8223(02)90323-8
13. Schwartz V, Rothpletx-Puglia P, Denmark R, Byham-Gray L. Comparison of standardized patients and real patients as an experiential teaching strategy in a nutrition counseling course for dietetic students. *Patient Educ Couns*. 2015;98(2):168-173. 10.1016/j.pec.2014.11.009
14. Swanepoel E, Tweedie J, Maher J. Building dietetic student confidence and professional identity through participation in a university health clinic. *Nutri Diet*. 2016;72(3):229-234. doi:10.1111/1747-0080.12268
15. Savoie-Roskos M, Chipman J, Keyes S. Increasing motivational interviewing self-efficacy and perceived skill level among junior dietetics students. *J Acad Nutr Diet*. 2018;18(10):148. doi.org/10.1016/j.jand.2018.08.098
16. Widder-Prewett R, Draime JA, Cameron G, Anderson D, Pinkerton M, Chen AMH. Impact of student versus faculty facilitators on motivational interviewing student outcomes. *Am J Pharm Educ*. 2017;81(6):107. doi:10.5688/ajpe816107
17. IBM SPSS [computer program]. *Version 26.0*. IMB Corp; 2019.
18. Miller W, Yahne C, Moyers T, Martinez J, Pirritano M. A randomized trial of methods to help clinicians learn motivational interviewing. *J Consult Clin Psychol*. 2004;72(6):1050-1062. doi:10.1037/0022-006X.72.6.1050
19. Madson M, Loingnon A, Lane C. Training in motivational interviewing: a systematic review. *J Subst*. 2009;36(1):101-109. doi:10.1016/j.jsat.2008.05.005