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Effectiveness of Training Final-Year Undergraduate Nutritionists in Motivational Interviewing.

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ABSTRACT

Objectives: To assess the efficacy of a motivational interviewing (MI) training programme on trainee nutritionists. *Methods:* A repeated measures design was applied to assess clinician behaviours in a 'helping' conversation. Participants were 32 nutrition students, assessed at baseline and one-month follow-up. *Results:* The training significantly reduced the use of closed questions and MI non-adherent behaviours (MINA) (P for both= <0.001). Trainees significantly increased reflections, affirmations, summaries (P for all = <0.001) and the use of open questions (P = <0.013) which are all key indicators of MI beginner-competence. The talk-time ratio of the nutritionists also changed significantly, in favour of the client which serves as an indication of MI being used effectively. There were also significant increases in 'global' scores for empathy, direction, autonomy/support, collaboration and evocation. *Conclusions*: Newly trained nutritionists 1 month post-training have a consultation style which suggested positive outcomes for clients. The trainees' scores at the one month post-training assessment were verifiable as 'beginning proficiency'. *Practice implications:* Behaviour change counselling skills for nutritionists were enhanced, at one month post-training. MI training workshops with video feedback enhances communication skills which are likely to lead to positive consultation-behaviour changes in the trainee nutritionists.

Key words: motivational interviewing, nutritionists, treatment fidelity, MITI 3.1

1. Introduction

Many undergraduate nutrition courses do not include behaviour change counselling as a substantive and essential part of training [1]. This is despite the fact that enactment of public health messages for nutrition and lifestyle involves volitional behavioural adaptation. This research investigates the efficacy of motivational interviewing (MI) training for undergraduate trainee nutritionists. Although changes to student knowledge and confidence following MI training workshops are demonstrable, effects on behavioural change skills in this group are less clear. A pre/post analysis of trainee nutritionists' consultancy-approach is warranted.

1.1 Background to MI in clinical settings

Motivational Interviewing (MI) is an evidence-based collaborative approach for helping people change behaviour and has been demonstrated to be effective in exploring and managing individual's ambivalence about changing behaviour [2]. Originally formed by work and research in the addictions field [3], MI has become commonly applied in a variety of

settings including healthcare [5]. Motivational Interviewing is both person-centred and directive, i.e. therapists listen for opportunities to elicit and strategically strengthen change talk (talk which expresses autonomy and commitment towards change) and consists of both relational (spirit/philosophy) and technical components. The spirit of MI includes evocation of resources and opportunities toward change, collaboration, acceptance of the individual's status, and compassion [2]. The technical, or micro-skills, used in the approach are commonly abbreviated as OARS (open ended questions, affirmations, reflections and summaries) and are used strategically to elicit and strengthen clients' change talk. For additional resources of the content and delivery of MI see Miller & Rollnick (2013) [2].

1.2 Training in MI

A common format for MI training is a short workshop - often 15 hours and often delivered over 2-3 days; or less commonly several shorter sessions with or without coaching and feedback via audio or video recordings [8-10]. Although the efficacy of such training has been commented on positively in the training of counsellors in the drug/addiction field [10] further work is needed in other areas such as nutrition. MI has continued to expand into other healthcare professions (e.g. diet/nutrition, primary care and pharmacology for examples) [11-13] and with that expansion a greater number of workshops are being delivered by MI trainers. Miller and Mount [9] commented on the efficacy of a 2-day MI workshop in changing the practice of trained counsellors and the effects of this on their clients - essentially changes to clinicians' practice were often maintained at 4 months but this was not strong enough to make a difference to client behaviours. Miller and Mount further suggested the efficacy of such training may be improved by using individual coaching/feedback. Schwalbe and colleagues also agree with feedback increasing the strength of outcomes suggesting that a dose of 3-4 feedback sessions over a six month period to sustain skills post-training [8].

Training [in MI] seeks to enhance both the technical and relational components of the approach. A brief review of the philosophy and empirical base of MI training accompanies numerous exercises designed to practise the skills of MI alongside the encouragement of self-reflection and independent skill development (using tools provided by the trainer) between training sessions. This research aimed to assess the potential impact of short duration workshops (which are realistic and commonplace in the current health environment) when supplemented by ongoing coaching in sessions and video feedback.

Training often incorporates a combination of simulated patients, role- and real-play for the purpose of experiencing and then applying MI, and studies have explored the relative merits of each [15,16]. Poirier and colleagues argue for the efficacy of role play in increasing medical students' confidence in carrying out MI [17] although Miller and Mount [9] also suggest there is a disparity between learners' confidence in carrying out MI with the actual observed practice thereof. An initial stage for learning MI may be an increase in confidence around using skills but a subsequent danger is the learners deciding they have 'done' MI and therefore have no more need to learn, be observed by skilled practitioners or reflect further on their own practice [2].

1.3 Behaviour change training/counselling skills essential for nutritionists

Training in MI for higher education students has been assessed previously in a variety of settings including: kinesiologists [18] pharmacists [19] and medical students[17] none, to our knowledge, have used the proposed format of 15 hours split into 5 sessions with video feedback. Training in behaviour change counselling is essential for undergraduate students of nutrition and yet lacking in course curricula where arguably the emphasis is on the bio-medical understanding of nutrition [1]. Information exchange alone may not be helpful in terms of long-term behaviour change where the autonomous decision rests with the patient/client and the nutritionist best serves as facilitator offering advice when a) it is asked for or b) they have clear explicit permission from the client to do so. In other areas of healthcare practice it has been demonstrated that short courses in communication skills can improve doctor-patient communication without adding time to consultations [21]. The imbalance between bio-medically important curriculum and behavioural change counselling training in nutrition needs attention. Bio-medically focussed professionals may find it easier to focus on bio-medicine than they do on the psycho-social areas needed for effective 'treatment' [22]. Where the patient's physiology is linked to their behaviour an understanding of psycho-physiology is needed, underpinned by evidence-based behavioural approaches to consultation [23]. In nutritionist training emphasis is in need of a shift so that more focus is placed upon the area of behaviour change skills rather than overly or only focussing on biological science [21-23].

The present investigation aims to answer the question: "What difference is there in behaviour change counselling competence between baseline and follow-up from 5x 3 hour training sessions and 1 session of video feedback?"

2. Methods:

2.1 Study Design and Procedure

At baseline, it was identified that students were untrained in counselling methods and anecdotal observation of early workshop conversations clarified that a limited person-centred approach was taken in relation to the nutritional consultations, which were mostly: friendly, supportive, suggestive and based around sharing the knowledge the students had gained <u>from</u> two years of nutrition study.

MI training was delivered to 52 novice counsellors from a final year undergraduate nutrition cohort. Participants received 5x3 hour face-to-face workshops on MI and were supported by one video coaching session with feedback (based on a recording of a trainee/client interaction recorded after the first 3 workshops). To help ensure fidelity of the training in the current study, the workshop was delivered by a member of the Motivational Interviewing Network of Trainers (MINT), the international organisation through which accredited training is offered.

2.2 MI training content

The aim of the training was to introduce trainees to the approach of MI, introduce practice and improve that practice as the workshops progressed. The training was conducted over the course of one semester in the final year of the student undergraduate nutrition degree. The baseline video assessment was conducted before any MI training had taken place and focussed on a 15 minute session where trainees were instructed to have a helpful conversation with a client (an actor conversant with the approach of MI) seeking help around lifestyle (exercise, diet and alcohol). In the follow-up video assessment trainees were instructed to employ OARS and avoid MI non-adherent behaviour, in the way they had practised throughout the workshops, using a nutritional consultation with the same actor and again focussing on one of the lifestyle issues above. A video was also made at the end of the first 3 workshops (i.e. after 9 hours of training). The recording was followed by students reviewing their own recording and submitting their reflections to the trainer who simultaneously

recorded his reflections on the students' performance and exchanged feedback. Following this a further 6 hours of training was carried out to complete the training which was followed one month later by a follow-up assessment with an actor. Students received a total of 15 hours of workshops plus the video feedback from the trainer. Students also had access to a 'Blackboard' site- a web based application containing materials, audio and video recordings used in the workshops.

The 5x 3 hour workshops were broken down into introducing the spirit and technical aspects (OARS) of MI with continuous practice, observation and modelling of the skills via key exercises described fully elsewhere [22] using audio, video and real-play demonstration alongside the trainees completing real-play exercises and receiving continuous feedback from the trainer. The split between didactic delivery and experiential/feedback on performance of MI skills throughout the workshops was 40:60 in favour of the experiential/feedback.

2.3 Coding

The workshops focussed on the spirit and practical use of the micro-skills of MI: reflections (complex and simple), questions (open and closed) affirmations, summaries (OARS), non-MI adherent behaviour and 'other' MI-adherent behaviour (e.g. the use of 1-10 scaling questions). Students were assessed on both behavioural counts and behaviours in accordance with the MITI 3.1 coding tool. The latter assess the level of collaboration, evocation, empathy and direction which are rated on a likert scale from 1 to 5. Recordings were then analysed by the author using MITI 3.1.1 and coded for global scores and behavioural counts. An independent coder, who was blind to the study aims/focus, was sent a randomly selected sample of videos of 30% of the baseline and 30% of the follow-up sessions.

32 of the trainees completed the video assessment at baseline (prior to any training) and then received 5x3 hour training workshops and completed the video at follow-up. A further 20 students completed the course but did not complete the baseline assessment: reasons for not completing the baseline assessment related to not attending the briefing session and baseline assessment or being absent from University during the baseline assessment period) and so are excluded from analysis. 30% of the 32 coded sessions were also independently coded. At follow-up all 32 students completed the video assessment and were MITI coded. Coding was

conducted by a trained MITI coder (the corresponding author) and a sample of the students' sessions were coded by an independent second coder for comparison. All coders were blinded as to the recordings being either baseline or follow-up.

2. 4 Participant characteristics

Participants who completed the study were 84% female with a mean age of 20 years. All were taken from the same degree cohort of undergraduate nutritionists at SHU. The MI training forms a key element of the students' behaviour change training in the final year of their programme and the post-training video assessment at the end of the programme described in the present paper is the summative assessment for the module titled: Changing Health Behaviour.

2. 5 Data Analysis

Data Analysis was performed using SPSS IBM (version 24). Summary statistics (mean, standard deviation) were recorded for 7 specific behaviours and 5 global outcomes explained below in table 1 scores were assessed separately at baseline and follow-up. Changes in means were assessed using matched pairs t-tests.

Table 1. Key to the 7 behaviours and 5 global outcomes 'coded' in the present study.

Behaviours	Definition/example
Open question	A question that does not yield a one word or yes/no response. e.g. 'tell me what that was like'?
Closed question	Yes/no or one word type response e.g.: where do you live?
Affirmation	A positive statement relating to a quality or behaviour in the client e.g.:' *it was difficult for you to do that but you were determined*'
Complex reflection	A reflection to a client statement which extends or interprets the meaning of what was said
Simple reflection	A repetition or re-iteration of what the client said

MINA (MI non-adherent behaviour)	e.g. Chastising, interrupting, judging, blaming
MI other	For instance using the 1-10 scaling- on a scale from 1-10 how important is this to you?
Global Rating*	**Definition**
Evocation	To what extent was the clinician evocative in their responses?
Collaboration	To what extent did the clinician's response promote collaboration?
Autonomy/support	How much empathy was expressed by the clinician?
Direction	How much direction was invoked by the clinician?
Empathy	How much empathy did the clinician express?

Table 1 serves as a key to behavioral counts and global ratings used in MI coding.* global ratings are scored by the coder on a 1-5 Likert scale from '1 - a little' to '5- a lot'

3. Results

Table 2 illustrates mean numbers of closed questions, open questions, simple and complex reflections, affirmations, MI non-adherent behaviour and the talk-time ratios between nutritionist and client per 15 minutes of conversation at baseline and follow-up. In every micro-skill a significant improvement was demonstrated, essentially a decrease in closed questions and MI non-adherent behaviour and increases in all other skills. Talk-time ratio also improved considerably in favour of giving the client more time to talk. These changes are statistically significant and more importantly clinically significant: with an increase in talk-time ratio being related to positive clinical outcomes for example [29].

Table 2. Baseline and one-month follow-up scores for Motivational Interviewing consistent behaviours in final year nutrition students (N= 32)

MI-related nutritionist behaviours (per 15 mins)	Baseline Mean (SD)	Follow-up Mean (SD)	P for Difference (paired t-test)
Number of closed questions	4.75 (2.21)	2.0 (2.05)	< 0.001
Number of open questions	3.03 (1.45)	3.91 (1.75)	0.013
Number of simple reflections	0.53 (0.67)	2.16 (1.72)	< 0.001
Number of complex reflections	0.25 (0.44)	3.63 (2.34)	< 0.001
Number of Affirmations	0.63 (0.91)	2.25 (1.02)	< 0.001
MI non-adherent behaviour (MINA)	2.97 (1.91)	0.94(1.63)	< 0.001
Talk time ratio% (Nutritionist: client)	79:21 (6.51)	29:71 (9.05)	< 0.001

Table 2 shows baseline and follow up scores amalgamated from the study coder and the independent coder.

Table 3 comparison of pre and post behavioral counts between the study coder and independent coder

Baseline (pre-training)	study coder mean (SD)	independent coder mean (SD)	Correl
Open Q	3.1 (1.36)	3.1 (1.36)	0.84
Closed Q	4.6 (2.88)	4.5 (2.45)	0.96
Total Q	8.0 (2.88)	7.8 (2.31)	0.99
Simple Refl	0.5 (0.76)	0.5 (0.74)	0.89
Complex Refl	0.1 (0.35)	0.1(0.35)	1.0
Affirmations	0.5 (0.76)	0.4 (0.74)	0.89
MINA*	3.8 (2.19)	3.5 (2.0)	0.98
MI Other	0	0	
Follow-up (post-training)	study coder mean (SD)	independent coder mean (SD)	Correl
Open Q	3.3 (1.16)	3.4 (1.43)	0.79
Closed Q	2.5 (2.84)	2.1 (1.85)	0.92
Total Q	5.8 (2.90)	5.5 (2.46)	0.98
Simple Refl	1.6 (0.97)	1.6 (0.97)	1
Complex Refl	3.8 (3.22)	3.8 (3.22)	1
Affirmations	2.5 (0.97)	2.3 (0.82)	0.90
MINA	1.5 (2.32)	1.8 (2.70)	0.98
MI Other	1 (0.67)	1(0.47)	0.71

*MINA = MI non adherent behaviour, for example interrupting the client advising without request or permission.

Table 4 indicates that, at baseline, subjects in the present study were, on average, below 'beginning proficiency' levels in all of the measures. At follow up, they had improved to at least 'beginning proficiency' level in all measures except MI-Adherent behaviours (although these had increased by 50 percentage points). On average, subjects had reached guideline levels for competency in Percent Open Questions and Percent Complex Reflections.

Table 4 baseline and follow-up behaviour scores for the subjects in the present study (N=32)

Clinician behaviour-count or summary-score thresholds	Beginning Proficiency	Competency	Baseline	Follow-up	*p* for difference
Global Clinician Ratings (mean) (SD)	3.5	4.0	1.9 (0.49)	3.5 (0.30)	<0.001
Reflection to question Ratio (R:Q)	1:1	2:1	0:1 (0.16)	1.26:1(0.98)	<0.001
Percent Open Questions (% OQ)	50	70	39	66	<0.001
Percent Complex Reflections (% CR)	40	50	17	61	<0.001
Percent MI-Adherent (% MIA)	90	100	20	70	<0.001

Table 4 shows the scores suggested (as per MITI 3.1.1, 2010) for both: 'beginning proficiency' and 'competency' against the scores at baseline and follow-up for the present investigation.

4. Discussion and conclusion

4.1 Discussion

Participants asked slightly more open questions at follow-up but considerably fewer closed questions, and made many more reflections (both simple and complex). The use of open questions are important in a behaviour change conversation [2] and have been encouraged as a strategy to gain more information from a client, in regards to the change issue in question: e.g. '*where does alcohol fit in your life*?' yields a different response to '*How much do you drink each week*?'. Affirmations and summaries were generally absent at pre-training but at follow-up clearly present; the inclusion of both also serve as important features in a helping conversation and represent a clear move towards a counselling style of interaction [2]. Between baseline and follow-up there was also a significant reduction in non-MI adherent behaviours as well as clearly raised 'global clinician ratings' these scores are for: empathy,

direction, autonomy/support, collaboration and evocation [26] and their marked increase in the follow-up session indicates a move towards an MI style approach. In the post-test what was observed was much closer to bona fide MI - that is to say MI in accordance with the MITI 3.1. At the final assessment the trainees were at a level described in table 3 as 'beginning proficiency'. All of these changes were statistically significant when using a paired samples t-test. In relation to treatment fidelity the independent coding of scores at baseline and follow-up show a high degree of consistency with intraclass correlations ranging from 0.71 to 1.0.

Discussion has already been carried out in an attempt to outline effective guidelines for MI training: of particular note are Miller and Mount's [9] paper on a small study of training and Madson, Loignon and Lane's [10] systematic review of training in MI. One of the findings from Madson and colleagues analysis is that the duration and the integration of training with observation and feedback/coaching are important elements in enhancing efficacy. The present investigation took note of Miller and Mount [9] findings and subsequently included in the design: 5 sessions (instead of a two-day block), continuous feedback during these sessions, video-observation and coaching (after 3 of the workshops were completed) in an attempt to enhance trainee outcomes.

The problem of incorporating MI into an existing training programme is ubiquitous - i.e. medical interns and others having MI or behaviour change training as a small part of their training may have little curriculum space for behaviour change skills; indeed even a short series of workshops may represent considerable time on a programme at 15 hours. Hence identifying the outcomes we can expect from short training courses is vital. Whilst learning through the 8 stages of MI is a possibility for professionals with a remit to work around behaviour change as the main focus of their job, it may also seem simply too much for those in the medical profession who may view the role of behaviour change counselling as a small part of what they do [18]. This work focusses on what can reasonably be expected with a short series of workshops. Perhaps an interest in learning more MI should be the key goal for these short training workshops [9] in Miller and Mount's 2001 paper, motivation to learn more actually decreased with participants seemingly feeling they had 'done' MI now and so could move on. Reasonably we could expect a burgeoning set of skills from the participants in the present investigation to diminish over time without further coaching and training.

4.2 Limitations

Limitations of the present investigation include the lack of a control group to set against this pre/post analysis; future investigation might usefully compare (for instance) person centred counselling and MI.

4.3 Practice implications

Implications for practice are that MI training with new nutritionists can be an effective way of ensuring practitioners start out with enhanced behaviour change skills.

The follow-up is short as the assessment was carried out four weeks post-training and so tells us what we might expect from a convenience cohort of nutritionists, within a few weeks of completing training, but not how that translates to behaviour months and years later. Skills are likely to drift and the effect is probably diluted over time; ongoing coaching and longer-term follow-up investigations are warranted.

4.4 Conclusion

The conclusions are that a series of 5x3 hour workshops with one video coaching session has a clear effect on MI skills practiced by the participants 1 month after training. The findings represent efficacy in introducing MI to undergraduate nutritionists with no prior counselling training. The present paper indicates some clear quantitative short-term effects outcomes from a short series of training workshops on MI with video feedback. Key influential practitioner behaviour counts and global scores for an MI styled approach rose significantly between baseline and follow-up. A reasonable expectation for nutrition trainees beginning MI needs further analysis; this pilot study suggests that some important outcomes can be achieved with 5x3 hour workshops with one follow-up video coaching session. This novel investigation gives some insight into where newly trained nutritionists 'are' following a brief set of workshops and incorporating video feedback in relation to MI skills. Essentially practice skills are evident at 1 month. Participants in their course evaluation forms (24 out of the 32 completers) also felt overwhelmingly that they would like to follow-up on MI training at some later date; further investigation might include analysis of what factors lead to a wish to further develop skills. In the context of a short training programme this should perhaps be a key aim for MI trainers - to leave participants wanting more.

Conflict of Interest

The authors declare that they have no relevant conflicting interests.

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