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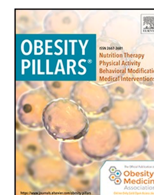

Awareness is not enough: Developing competencies in behaviour change counselling for obesity management

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ABSTRACT

Background: This study describes the development and evaluation of a competency based training program in behaviour change counselling for obesity management. This was a real world study attempting to obtain evidence on the learning experience; specifically, achievement of level of competency as well as personal experiences of the integration of skills learned into practice.

Methods: This was a training effectiveness study involving a total of 28 evaluable licenced healthcare providers providing obesity care services. The design for this study is pre-experimental; specifically a one-group post-test only quasi-experimental design.

Based on previous work developing a competency-based model of behaviour change counselling (developing change-based relationships, assessing and promoting readiness to change, implementing behaviour modification when ready, and addressing psychosocial determinants of behaviour) we report on training outcomes; specifically, the level of competency achieved in the various skill components of the intervention model. The model of training was based on corrective feedback, the development of peer-based learning and the creation of a mindmap to guide adaptation of interventions to the unique characteristics of individuals with obesity. Quantitative data on competency of components skills and qualitative information on the experience of training were used to evaluate the program.

Results: Objective assessment of skill competency post training demonstrated moderate to high skill in all aspects of behaviour change counselling. Learners reported frequent use of skills in clinical practice, particularly change-based relationships and readiness assessment/intervention. Qualitative interviews confirmed the value to learners in creating a safe place for corrective feedback, the development of the mindmap concept and the opportunity to teach back learned skills to peers.

Conclusion: Provision of competency-based behaviour change counselling in obesity management is critical to support the reformulation of obesity as a chronic disease and to be an important adjunct to medical/surgical interventions. In this paper, we have demonstrated the value of an intensive training program for obesity providers.

1. Introduction

Obesity management changes dramatically [1] by recognizing it as a chronic disease [2,3] based on neurobiological/hormonal mechanisms underlying adiposopathy [4,5]. This view shifts the focus from personal failure to control behaviour to recognition of biology, genetics, environment, and psychosocial factors as drivers of obesity [6]. With recently developed effective and safe medical therapies producing 10–15+% weight loss [7] interest has increased in the medical management of obesity. Nonetheless, behaviour change remains a core aspect of obesity management. Persons with obesity (PwO) benefit from healthy eating, physical activity and adherence to medical management interventions. As well, PwO face coping with psychological trauma from stigma [8], unrealistic expectations concerning weight loss and body shape goals [9], and overcoming barriers to sustained behaviour change [10,11].

Behaviour change interventions are complex and numerous [12]. The Behaviour Change Taxonomy organizes 93 behaviour change interventions within 16 domains [13,14]. Additional techniques can be added from Motivational Interviewing (MI) [15] and Acceptance and Commitment Therapies [16]. Identifying, implementing, and evaluating

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Abbreviations:

PwO	persons with obesity
MI	motivational interviewing
CBT	cognitive behaviour therapy
AOCC	Advanced Obesity Counselling Certification
ABC	Anntecedents, behaviour, consequents
BCCS	Behavoiur Change Competency Scale
OC	Obesity Canada
NIPC	National Institute for Prevention and Cardiovascular Health (Ireland)

such a multitude of interventions is challenging. Studies retrospectively coding interventions using taxonomies suggest that less than half of available interventions are implemented and few studies use the taxonomy prospectively [17,18]. This raises questions about the fidelity of behaviour change interventions. Fidelity in behavioural interventions is critical and involves treatment integrity (treatment delivered as intended), that is, receipt of the training and enactment of the intervention [19] Greater specificity about which techniques are being used with any given intervention is needed [17] as variability in delivery of component skills from provider to provider is a major threat to the internal validity of a study.

Along with fidelity is the issue of competency; how skillfully interventions are implemented. Current training programs tend to be brief (several hours over a few sessions [20–23]), focused on education and demonstration, not corrective feedback, and evaluated primarily using self-report [24–27]. Several competency assessment scales have been developed [28–30] and when used, results suggest that providers struggle to achieve/maintain competency [31,32].

Challenges to fidelity and competency are illustrated in the UK, MOVE IT trial [33]. This randomized trial evaluated individual/group MI and cognitive behavioural therapy (CBT) for weight loss and increased physical activity in those at high risk of cardiovascular disease. The intervention proved ineffective which was attributed to the sample recruited. However, results indicated that "… the MI aspects of the intervention were not delivered at the desired competency level … none … reached the minimum MITI-based proficiency level and only three met the competency criteria adapted for the study". Further, "… only three BCTs [behaviour change techniques] ('prompt intention formation', 'prompt specific goal setting', agree on behavioural contract') were administered in >70 % of sessions" (p. 75). Clearly there is a need to promote fidelity and competency in implementing behaviour change interventions. Without this, one of the pillars of obesity management [1] – psychological and behavioural interventions – is at risk of collapsing.

Our work in the development of fidelity and competency training in behaviour change counselling [10,30,30,34,35] has led us to believe that core to skill development is corrective feedback, including peer-to-peer feedback that creates a supportive community of practice. Further, rather than focusing on methods (implementing specific techniques in a standardized manner) we focus on the development of a mental map (mindmap) that allows the provider to organize methods using principles. The structure of this mindmap includes: establishing change-based relationships, assessing and promoting readiness, implementing specific behaviour change interventions when ready, and addressing psychosocial determinants of behaviour [34].

In this paper we report on the development and evaluation of a training program for behaviour change counselling in obesity management; the **A**dvanced **O**besity **C**ounselling **C**ertification - **AOCC** program. The AOCC program is based on previous work describing a comprehensive training framework [34], a competency assessment tool [30], and an implementation plan [35].

Our view of the learning journey to competency begins with awareness, which provides an opportunity to develop competence, which can lead to confidence (using competencies in complicated situations) and finally, provides an opportunity for creativity (adapting skills to specific contexts) [34]. Most training programs that offer brief training (e.g., half-day to 2-day workshops with no follow up training beyond 6 weeks) would best be categorized as promoting awareness. To move to competency and confidence there needs to be opportunities for corrective feedback. Corrective feedback can be optimized if it occurs over time and involves peer-to-peer feedback. Our training program is intended for healthcare providers who are expert in their areas of practice; physicians, nurses, dietitians, pharmacists, etc. While such providers may lack intensive, systematic training in behaviour change counselling most have basic training and many are confident in their ability to support PwO through behaviour change. It is critical to respect the competencies providers bring into training and at the same time promote increased competency.

2. Methods

This was a training effectiveness study in a cohort of obesity clinicians interested in learning the specifics of behaviour change counselling for obesity management.

2.1. AOCC training program

Training occurred virtually and was organized around our model of skill development (awareness, competency, confidence, creativity) and the four core competencies described next. Fig. 1 shows the framework for the mindmap goal of our training program.

2.1.1. Core competency 1

Establishment of Change-Based Relationships, via the following competencies.

- monitoring for the dangers of a patient-provider relationship characterized by a teach and tell dynamic rather than a collaborate and empower dynamic [10]. When providers assume the role of expert, they are at risk of falling into an imbalanced power dynamic (e.g., "my role is to recommend and educate; your role is to be compliant") [10]. Instead collaboration leading to empowerment requires each person's expertise, not just the provider
- normalizing that change is hard
- establishing a relationship not based on the expert (diagnose, recommend and evaluate) but on establishing an alliance that is based on bond, goal and task [36].
- using motivational communication principles to support intrinsic motivation using the ask, listen, summarize, invite framework [35].

2.1.2. Core competency 2

Getting to Behaviour, via the following competencies.

- defining the behaviour to be changed using behavioural analysis
- assessing readiness using a traffic light metaphor in the context of guided discovery via structured interviewing leading to shared decision making [34].
- for those who are ambivalent (yellow light) exploring ambivalence, using decisional balance and values-based goals to tip the balance toward change
- for those who are not ready (red light) maintaining the relationship and understanding the reasons for not being ready to elicit ambivalence

2.1.3. Core competency 3

Behaviour Modification competencies are organized around [37].

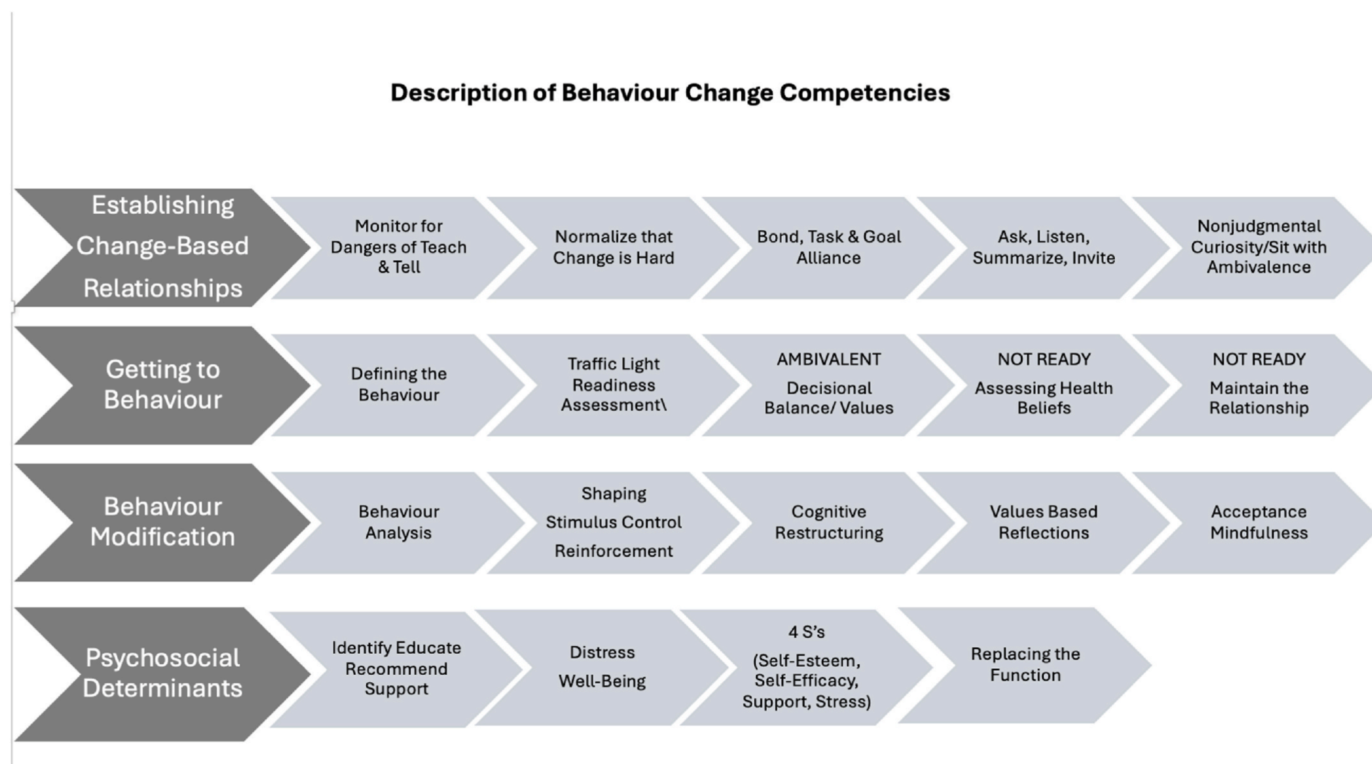

Fig. 1. Overview of training model and competencies.

- behavioural analysis (ABC model: antecedents, behaviour, consequents)
- associative learning principles (stimulus control, behaviour shaping, reinforcement management)
- cognitive restructuring using CBT principles
- linking interventions to values-based goals
- mindfulness and acceptance principles

2.1.4. *Core competency 4*

Psychosocial Determinants of Behaviour, via the following competencies [34].

- addressing psychosocial issues related to behaviour change within scope of practice through the perspective of identify, educate, recommend and support
- understand distress using the quality-of-life model (distress and well-being)
- using the constructs of self-esteem, self-efficacy, social support, and stress management (the 4 Ss) to promote maintenance of behaviour change
- using the concept of replacing the function when a health interfering behaviour serves a purpose for the individual (e.g., supporting stress management with a person who copes with stress using food)

2.2. *Procedure*

As noted above, the design of this study is pre-experimental; specifically, a one-group post-test only quasi-experimental design [38]. As such competency was not assessed prior to training. Training involved a 25-week series of 1.5-h synchronous on-line sessions organized into Awareness, Competency, and Confidence phases. This capitalizes on the principle of repetition and relevance; i.e., repeating the learning material three times (at each phase) allowed learners to rehearse skills in a manner that supported integration of new skills into existing skills as well as the development of self-efficacy in the use of skills.

2.2.1. *Awareness (5 sessions)*

Each session involved a didactic presentation, video demonstrations of skills, and discussion. Session 1 overviewed the entire four competencies. Sessions 2 to 5 sequentially presented each competency separately. Learners discussed the concepts and skills, saw examples (pre-recorded videos or live roleplay demonstrations), and developed trusting relationships between peers and facilitators. Weekly homework involved readings/videos and submitting written reflective feedback.

2.2.2. *Competency (12 sessions)*

Each session used demonstration and role plays of skills. Videos were used to demonstrate skills, roleplays began with the facilitators demonstrating and then engaging the learners in roleplays. As learners commented on what they saw in others and received feedback from their peers the facilitators provided corrective feedback and demonstrated how the mindmap can be used to guide intervention. Homework involved learners recording roleplays of using specific skills. Both facilitators provided written feedback on each roleplay demonstration and rated competency for each learner for each session using the Behaviour Change Counselling Scale (BCCS) [30]. In the final sessions of the Competency phase the BCCS scale was introduced and used as a reflective tool to aid learners distinguishing between low, moderate, and high competency levels of any given skill.

2.2.3. *Confidence (8 sessions)*

The purpose of this phase was for the learners to present the core competencies to their peers. During each session two pairs of learners worked together and presented the competencies again, in sequence, to their peers. There was no explicit homework during this phase. Each pair was instructed to incorporate the BCCS competency criteria into their presentation. Learners presented twice during this phase.

This program was pilot tested between September 2021 and April 2022 with a cohort of 20 learners recruited from two sources: clinicians from the Chronic Disease Education and Patient Support Program of Novo Nordisk Canada (N = 11) and the C-Endo clinical service in

Calgary (N = 9). Five of the Novo Nordisk and one C-Endo participants withdrew from training before the end of the Awareness phase due to work conflicts preventing full participation. Completers included 10 dietitians, 3 nurses and one pharmacist.

This program was developed within the Department of Family Medicine at Dalhousie University in collaboration with Obesity Canada (OC) with the intention to embed the training program into OC's ongoing education platform. As well, three members of OC's Patient Engagement Committee, who were volunteers with lived experience of obesity, were engaged to create videos to be used in the demonstration of skills.

2.3. Participants

Learners, licenced clinicians in current obesity practice with organizational support to participate in the course, applied through the OC website. All learners were registered healthcare providers from either medicine, dietetics, nursing, psychology, physiotherapy, or naturopathy. Any learner who missed a session was required to review the video of the session prior to the next session.

A total of 28 applications were received, of which 25 began training (89 %); three withdrew before training began. In addition, due to ongoing collaborations between the first author and the National Institute for Prevention and Cardiovascular Health (NIPC) in Ireland, an additional 9 health professionals that were part of Ireland's new Tier 2 Obesity initiative[1] enrolled. These 34 learners were split into two cohorts to manage group size. There were 14 learners in each cohort. Learners were assigned to cohorts based on time availability (cohorts were scheduled on different days) and data from both cohorts were combined for analyses. Nineteen learners were dietitians, six were nurses, one a physiotherapist, three had psychology backgrounds (one psychologist, two psychotherapists), four were physicians and one a naturopathic doctor.

All participants consented to having their anonymous competency data included in presentations and publications. Further, the focus groups sessions began with the following: "Before we begin we'd like to ask for your consent for the information to be used for program evaluation as well as anonymized information being shared in presentations and publications? If you agree please raise your hand". All participants consented. As this training program is a component of continuous performance improvement ethical approval from a Research Ethics Board was not obtained.

2.4. Measures

To evaluate this training program, we used a mixed methods approach.

2.4.1. Quantitative data

The Behaviour Change Counselling Scale (BCCS) was used to assess competency. Each of the component skills (see Fig. 1) was rated using the BCCS. During the competency phase of training, the two facilitators used the relevant sections of the BCCS to evaluate the video roleplays submitted by the learners. Both facilitators reviewed all of the submitted roleplays and independently rated the skill level on a 7-point likert scale (1 and 2 = low competency; 3–5 moderate competency; 6–7 high competency). Facilitators reached a final rating of competency by consensus.

Further, learners completed ratings at the end of training; specifically; the percentage of time the skill is being used in clinical practice, the extent to which the skills is being used in complex cases and the extent to which they received corrective feedback on the use of the specific skill (both rated low, moderate, or high).

2.4.2. Qualitative data

Following training all learners were invited to participate in one of two 90-min semi-structured focus groups (see Table 1). Transcripts were uploaded to NVIVO and main themes were extracted using Thematic Analysis [39], a flexible 6-step analytical process. Data triangulation [40] was achieved by having two coders using a consensus approach to final coding.

3. Results

3.1. Learners

Of 34 learners, 28 completed training (82 %), one withdrew after session 2, one after session 3, two after session 5, one after session 8 and one after session 11.

3.2. Experience of training

Ratings of skill use, extent of use in complex cases and the extent of corrective feedback received are presented in Table 2. These results demonstrate that the change-based relationship skills are heavily relied upon. All skills were used at least 80 % of the time. Use remained high with complex cases and very few learners reported a low extent of corrective feedback received. There was near even split in ratings of moderate and high amounts of corrective feedback.

Regarding getting to behaviour most learners feel able to define the behaviors using behavioural analysis and almost all report receiving at least a moderate degree of corrective feedback. In conducting readiness assessments, almost all learners report receiving at least moderate levels of corrective feedback, but readiness assessment is used about half of the time and is less used in complex cases. Similar results were found for managing patients assessed as ambivalent or not ready to change.

Behaviour modification skills are reported to be used about half the time, and the most frequent skills used were behavioural analysis, goal setting, and behavioural shaping. Learners are somewhat challenged to use these skills with complex patients and several skills are reported to be associated with lower levels of corrective feedback, particularly mindfulness interventions and reinforcement management.

Finally, regarding psychosocial determinants of behaviour, the

Table 1
Questions to guide the focus group discussion.

Focus Group Questions	
1. Can you share with us your experience as learners in the program?	
Follow up Questions	Can you comment on your experience with the role play and feedback aspect of the training (relative to didactic presentation)?
	Can you comment on your experience with the sequence of awareness, competency, and confidence (repetition and relevance)?
	Can you comment on your experience in regards to the community of practice idea (see one, do one, teach one)?
	Can you comment on your experience in learning given that you are an experienced expert licenced professional?
2. Can you talk about your use of the mindmap skills in your professional practice?	
Follow up Questions	What has been the easiest to implement?
	What has been the most challenging?
	Do you see any challenges down the road regarding these skills?
	What do you anticipate getting easier; faster (or slower)?
3. Can you talk about the impact of training on collegial interactions and team functioning?	
Follow up Questions	What has been the easiest to implement?
	What has been the most difficult to implement?
	Did anything surprise you about the usefulness of these skills in an inter-professional context?
4. Is there anything else you'd like to share about the learning experience with the DCOM training program?	

[1] https://www.hse.ie/eng/about/who/cspd/ncps/obesity/model-of-care/obesity-model-of-care-highlights.pdf.

Table 2
Learner use of competencies.

N = 28	% Time Use Skills (Mean/SD)	Use in Complex Cases (%)			Received Corrective Feedback (%)		
		Low	Moderate	High	Low	Moderate	High
Change-Based Relationships							
Bond Task & Goal Alliance	93.3 (10.0)	0	42.9	57.1	4.5	45.5	50.0
Danger of Teach & Tell	80.7 (21.2)	4.8	52.4	42.9	0.0	50.0	50.0
Ask, Listen, Summarize, Invite	85.4 (15.7)	0	52.4	47.6	4.5	40.9	54.5
Nonjudgmental Curiosity	92.3 (10.2)	0	28.6	71.4	4.5	50.0	45.5
Making room for ambivalence	81.6 (20.7)	0	57.1	42.9	4.5	45.5	50.0
Getting to Behaviour							
Defining Behaviour	75.6 (28.1)	5.3	78.9	15.8	0.0	55.0	45.0
Introduce structure	48.7 (31.7)	30.0	45.0	25.0	4.5	27.3	68.2
Ask perceives problem	53.8 (36.5)	26.3	42.1	31.6	5.0	35.0	60.0
Ask perceives distress	58.3 (36.5)	21.1	36.8	42.1	4.8	38.1	57.1
Ask goal orientation	56.7 (34.3)	26.3	47.4	26.3	4.8	38.1	57.1
Ask act now	54.2 (32.8)	31.6	36.8	31.6	4.8	28.6	66.7
Gives Feedback	56.7 (33.7)	21.1	47.4	31.6	4.8	38.1	57.1
Yellow Light							
Ambivalence & Decisional Balance	59.8 (29.4)	15.0	60.0	25.0	0.0	50.0	50.0
Values Oriented Goals	65.0 (27.2)	15.0	70.0	15.0	14.3	42.9	42.9
Red Light							
Remove expectation of change	60.3 (33.0)	21.1	47.4	31.6	4.5	50.0	45.5
Explore health beliefs	61.1 (32.0)	15.8	57.9	26.3	9.1	50.0	40.9
Behaviour Modification							
Behaviour analysis	64.4 (30.1)	21.1	52.6	26.3	4.8	47.6	47.6
SMART Goals	77.9 (21.4)	5.3	52.6	42.1	19.0	42.9	38.1
Shaping	66.3 (26.4)	15.8	57.9	26.3	19.0	47.6	33.3
Stimulus Control	60.3 (24.2)	15.8	63.2	21.1	9.5	47.6	42.9
Reinforcement Management	53.3 (25.3)	26.3	57.9	15.8	23.8	46.6	28.6
Cognitive analysis	48.0 (32.6)	52.6	31.6	15.8	9.5	61.9	28.6
Cognitive restructuring	48.0 (30.5)	42.1	36.8	21.1	9.5	61.9	28.6
Mindfulness interventions	55.4 (31.2)	31.6	47.4	21.1	28.6	42.9	28.6
PsychoSocial Determinants							
Identify, Educate, Recommend, Support	76.0 (20.6)	0.0	40.0	60.0	4.8	52.4	42.9
Distress/Wellbeing	75.0 (24.0)	0.0	40.0	60.0	9.5	47.6	42.9
Replacing the Function	59.0 (27.0)	20.0	60.0	20.0	14.3	42.9	42.9
4 S's	56.0 (28.2)	26.3	57.9	15.8	28.6	42.9	28.6

Identify, Educate, Recommend and Support framework as well as assessing distress using a quality-of-life perspective were frequently used, even with complex cases. Replacing the function and the 4 Ss are less commonly used, including with complex cases. The extent of corrective feedback is at least moderate for most learners, except for the 4 Ss, where almost one third of learners report a low level of corrective feedback.

3.3. Ratings of competency achieved

Competency was rated using a 7-point Likert scale (1–2 low, 3–5 moderate, and 6–7 high competency). Results are presented in Table 3. Mean competency scores were in the higher end of the moderate range (range 4.4–4.8) for motivational communication skills, working with patients who are not ready to change, as well as all the behaviour modification and psychosocial determinants of behaviour skills. Mean scores for establishing change-based relationships by avoiding a teach and tell dynamic and using Ask, Listen Summarize, Invite were in the high range (above 5.0), as were the skills of assessing readiness using the traffic light approach and working with patients who are ambivalent. Table 3 also presents categorical scores of competency, where it is noteworthy how few learners were rated in the low category (less than 8 %). Over 90 % of learners were rated in the moderate or high levels of competency.

Table 3
Competency ratings on skills.

N = 28	Rated Competency (Mean/SD)	Categorical Competency (%)		
		Low	Moderate	High
Change-Based Relationships				
Avoid teach and tell; Bond, Task Goal Alliance	5.5 (0.9)	3.7	25.9	70.4
Ask, Listen, Summarize, Invite (Motivational communication)	4.4 (0.8)	3.6	85.7	10.7
Getting to Behaviour				
Assess Readiness Using Traffic Light Metaphor	5.6 (0.8)	3.6	14.3	82.1
Working with Yellow Light, Decisional Balance Analysis	5.3 (0.9)	0.0	37.0	63.0
Addressing Personal Discomfort with Ambivalence	5.2 (1.0)	4.0	44.0	52.0
Working with Red Light scenarios	4.6 (1.2)	7.1	57.1	35.7
Behaviour Modification				
Behavioural analysis, Stimulus Control, Reinforcement	4.8 (1.2)	0.0	57.1	42.9
CBT and Acceptance skills	4.8 (1.2)	3.6	53.6	42.9
PsychoSocial Determinants				
Use Identify, Educate, Recommend, and Support	4.8 (1.0)	0.0	73.1	26.9

3.4. Qualitative results

3.4.1. Learner experiences of course characteristics

Several themes resulted from the analysis of the focus group transcripts (see Table 4). The course was described as "unique" compared to other courses, due to the safe learning environment, presence of learners from diverse backgrounds, and ample opportunity for skill practice with corrective feedback.

> … unique course in the sense that right from the get-go, it felt like a very safe learning environment ….that, you know we're not being

Table 4
Themes and quotes from qualitative focus groups.

Theme		Quote
Characteristics of the Course Structure		
Unique Course	Safe Environment Community Of Professionals Opportunity For Corrective Feedback	*… unique course in the sense that right from the get-go, it felt like a very safe learning environment. I think other courses that I feel it you go into, and it feels very intimidating, and it kind of continues that way the whole time, whereas with this course, with M&T meeting and it kind of continues that way the whole time whereas with this course with M&T meeting it I think the way that you approached it, and kind of said right off from the get go that, you know we're not being judged any. Everybody's learning here, and it's it's safe. I think that was very valuable and also unique to the learning (Al)* *I do think it's I do think it's nice to know, like, when you're going in that, that everybody is a licensed help care professional. And I think that helps the course I don't know how to say this in a good way, but it's efficient that way, too. Right. I mean everybody, even though you have different professions, like everybody, speaks common language and has some common experiences that they're bringing to the table (RO)* *And that's what I really liked about this course that it wasn't all just, you know, reading our articles. And your writing stuff, that the practical sessions were most beneficial. (CD)* *… the big difference with this [course] is that we do have that timeframe to kind of practice those skills in between and that it really kept it a lot more fresh in our mind … (Kr)* *I think I remember you saying maybe the first class or really early on about how you know so many of us attended like conferences and things, and we take in that information, and maybe for the week after we implement it. But then you know all the great resources and things we've taken in get shoved in a binder under, you know the desk or somewhere, never to be looked at again, and and the big difference with this is that we do have that timeframe to kind of practice those skills in between and that it really kept it a lot more fresh in our mind versus just yeah (Kr)*
Course Structure	Awareness, Competence, Confidence Repetition and Relevance	*And then when we went to the second part, where the group was teaching back, I have to say, I wanna go in and save the slides, because what I would like to do is match up and watch you and T (M&T), teach and I got a lot from that. And then I found it. It really grounded. It made things make even more sense to me when it was taught by the group. So I want to put those sessions together and watch them back to back with each learning skill, and doing it again to get everything refreshed in my mind again. I found that the group presentations really, really dug in more and really help me really understand things as much as I dreaded doing ours (Ta)* *Yeah, I think when at the beginning of the course, when we first talked about how we'd be going over the same content, but in different ways, you know, 3 times initially, I thought, you know, like, Oh, it's just gonna feel repetitive. But it definitely didn't feel repetitive at all, and it it very much was essential to the making. The course effective. Because I think with most courses they would just end after the awareness stage. And now, after being through all the 3 stages, I know that like, I wouldn't have gotten as much out of it if we had just stopped there. You know that all of our learning, and being able to build upon everything really happened in those last 2 stages. So I think the way it was set up was great (Al)* *I think, as a learner, I was really intrigued when you said in the very first day we're going to be repeating all of this like we're done. We're just going to do the same thing over again. And then the second time through, was slower and more intensive, and I found it very, very useful that we had to be the ones to present it the third time around. I think for me as a learner, the way that I remember best is to practice more than once, and to say it out loud and teach someone else (Ca)* *Yeah, I think that maybe that I really really like the structure of how it was repeated 3 times (KH)* *… really appreciate that, especially as adults, you know, we know that most of us need to hear things more than once. To, you know, grasp it, to understand it, and it really progressed one step on top of the other on top of the other. And I think you know kind of, I think AA was the one mentioning about the confidence sessions, and it just really like you really have to dig and to be able to teach it back. You really have to understand it yourself. So I think the process was really good (SF)*
Initial Discomfort		*… you know, when I found out that I was accepted to take the program, I kept thinking like I was intimidated thinking maybe I shouldn't be doing this, you know, maybe I'm not prepared for it. And then I had to remind myself, well, I've been working in healthcare for over 16 years, but it was sort of reminding myself that I'm taking this course to learn more. It's you know. Everybody was coming to this course, not really knowing what to expect, and we're all here for the same reason. So I think that opening of this it's gonna be awkward, you know. I think that really helped to kind of calm my nerves a little bit, that we were all feeling the same way. We were all kind of in the same boat. We were all gonna be going through that same awkward clunkiness together, and I think this was unlike any course that I've ever taken. Where it is that typical didactic or self directed learning. But I think that was probably the most valuable, and the most important part of it was being able to practice these skills. Because this isn't really just about knowledge, you know, absorption and regurgitation. It was really that skill that was learned (Ke).* *And I would say it was so helpful to be uncomfortable, cause I think it's required to change, to try something new, and it was really a safe space to be able to do that, to get the feedback. (SF)*

(*continued on next page*)

Table 4 (*continued*)

Theme	Quote
Value of Role Play and Corrective Feedback	*And I would say it was so helpful to be uncomfortable, cause I think it's required to change, to try something new, and it was really a safe space to be able to do that, to get the feedback. (SF)*
	And and just being able to be with the same partner to for role plays each week like they felt a lot different the first week where BLANK is my partner. So she was a complete stranger to me. Week one versus as we got you know, certainly halfway through, and then I'm you know, learning about our family like we're learning all kinds of things, and just much more comfortable conversation. And and I think you felt more comfortable to kind of mess up or try something new, and just to get that feedback and appreciate the feedback even from, you know, our partners viewpoint as well. So yeah, it just made it quite a quite a difference to have that opportunity to practice, as particularly as a group in the class form (Kr)
FOCUS ON MINDMAP	
Beneficial	*I think that because a lot of us are coming into this with not a lot of experience in counselling and and behaviorism, that the mind map was incredibly helpful. Right? Because you know, if you don't have any kind of the when you're learning something new, you do kind of need to create a structure to rely upon right in in your mind. And so I thought the mind map was fantastic (RO)*
	The mind map is also a great tool to go back, you know, as we work towards master, because we're gonna talk to patients or clients. And you know, even still, now, we're gonna get stuck we're gonna get to a point. We're gonna hang up the phone or leave the appointment, and think I got stuck. I didn't know where to go, so it'll be a great tool to go back. (DB)
	… I'm kind of stuck down this road, and I don't know how to get out. I feel like it's a dead end. And the mind map really helped me. Just you know. Listen to my automatic thoughts at the time, you know. Watch them, and then kind of pull myself gently back to the mind map. You got this, off we go (RO)
	I think for me is maybe that it isn't always linear. And often, maybe isn't right forward, and then it might go back. And then it might jump to somewhere else. So I think it's like a general overview. The mind map was really helpful. But then, learning how to jump, that's something I'm gonna have to keep practicing. Of how to go from one step to another without that linear process. (SF)
Reflections on Interdisciplinary Care	*So my perceived benefit is a future hypothetical situation. But I have had a few complex cases over the years where I have tried to collaborate with BBB, and they've just said, "Well, if they're not doing what you tell them, then you should just discharge", and those conversations have always stopped me in my tracks, because that wasn't my intention and then I never knew where to go next, so I feel a little bit better equipped now to have a conversation with BBB about how to proceed with that patient's care without discharging, so I mean I I'd like to think that conversation will never happen again, but when it does, I feel like I have some tools now. (Ca)*
	… when there's somebody in red light, I know what to do … I don't feel like, Okay, where do I go from here? Now I actually feel like I know where to go. (DB)
	Understanding more about the patient's perspective and collaborating, because so much of it is, there's a little bit of medicine, but although most of its behavior change, and and with the CCC that I'm working with just made it a whole lot more rich to get on a call together talk about things, bounce ideas off each other, and it it creates this kind of framework for a lot of meaningful, meaningful dialogue, and it makes it fun. (MM)
	I find that I'm actually really enthusiastic to tell all of my dietitian colleagues about it, because we've quite big team. So I've now volunteered to update our obesity care plan, and I'm hoping to include some of the concepts in it (KH)
	I'd say I think obesity, like other chronic diseases, but especially obesity with the bias, is a team sport, and this kind of knowledge base helps me kinda see what that team could look like or what a program could look like to have a common language and so I mentioned earlier in the obesity guidelines. The 3 pillars that that behavior change is always put out there. But I don't think most people reading it. Know much about what it means. Certainly, for me was a black box and kind of opening that up and understanding it better, and understanding the principles and skills that other team members, I think, should essentially have. So that we're really are on the same page and working together that's been really key. So I think it. That's kind of the beginning of a foundation for for making a bigger shift in healthcare. (MM)
General Course Feedback	*Yeah, I think when some of the opening lecture about moving from an expert to a collaborator, I agree that as teachers, you both M&T became collaborators right from the beginning, in terms of our learning experience, so it did feel like rather rather than you both being experts. which you are you. It felt like a partnership, and that I think, did create that safe environment for us to take risks and see how things go. (MM)*
	At the beginning I felt extremely overwhelmed. I felt that I was possibly way in over my head. A lot of the language, although I've had some training, was very, very new to me, and I wasn't really sure what it was about. But with the non-judgmental interactions it allowed me to stay engaged in this relationship. (DB)
	There we go. So you know, I think (M&T) have this goal of not just teaching us these skills, but actual, like cultural change within the practice. And you guys provided so much encouragement to us to

(*continued on next page*)

Table 4 (*continued*)

Theme	Quote
	make us feel competent in doing that within our own circles. And as you're maybe like expanding and having other people teach it, I think that will be a really part. That's maybe important to formalize, because I can see it may be getting lost. If you had other instructors. (SC)
	I just to add on that piece, I do feel that you both made it feel very comfortable to makes mistakes, and I think that's really important as part of this, you know, with all the role plays that took place. It wasn't like, you know, you know, normalized. The fact that this is hard even for us to do right. So I think that was really helpful for us to be able to be uncomfortable with that (SF)

judged any. Everybody's learning here, and it's it's safe. I think that was very valuable and also unique to the learning.

It was obviously different to anything I've done before. I've done a behavior change course before. Where we had like we did one or two role plays and got feedback on them, but not to the extent that we did I in this course, and it was super useful to practice the skills and actually get feedback.

Learners also appreciated the structure of the learning journey (awareness, competence, confidence) and the value of repetition in enhancing learning:

… really appreciate that, especially as adults, you know, we know that most of us need to hear things more than once. To, you know, grasp it, to understand it, and it really progressed one step on top of the other on top of the other … you really have to dig and to be able to teach it back. You really have to understand it yourself. So I think the process was really good.

Learners appreciated the length and interactive nature of the program and described the value of opportunities to role play and "test the waters" during sessions while receiving feedback from facilitators and peers.

… *And I would say it was so helpful to be uncomfortable, cause I think it's required to change, to try something new, and it was really a safe space to be able to do that, to get the feedback.*

The learners described feeling initial discomfort regarding the volume of content and the requirement for roleplay and corrective feedback.

… you know, when I found out that I was accepted to take the program, I kept thinking like I was intimidated thinking maybe I shouldn't be doing this, you know, maybe I'm not prepared for it …. the most important part of it was being able to practice these skills. Because this isn't really just about knowledge, you know, absorption and regurgitation. It was really that skill that was learned.

Peer interactions, practice opportunities, and the safe learning environment were viewed as supporting the development of a cohesive and supportive community of practice between learners. Roleplays and corrective feedback were described as important components of training.

… I think you felt more comfortable to kind of mess up or try something new, and just to get that feedback and appreciate the feedback even from, you know, our partners viewpoint as well. So yeah, it just made it quite a quite a difference to have that opportunity to practice … particularly as a group …

3.4.2. Experience of the mindmap

In reflecting on the mindmap concept, the consensus was that it was both a challenging and useful construct to learn and implement.

… I think that because a lot of us are coming into this with not a lot of experience in counseling and and behaviorism, that the mind map was incredibly helpful. Right? Because you know, if you don't have any kind of the when you're learning something new, you do kind of need to create a structure to rely upon right in in your mind. And so I thought the mind map was fantastic.

The mindmap was described as particularly helpful when feeling "stuck" or "lost":

… I'm kind of stuck down this road, and I don't know how to get out. I feel like it's a dead end. And the mind map really helped me. Just you know. Listen to my automatic thoughts at the time, you know, watch them, and then kind of pull myself gently back to the mind map. You got this, off we go.

Some of the learners also described ideas for creating their own personalized mindmap:

… because I'm a very visual learner, and I see myself in the near future actually … getting a poster board and making an algorithm for myself, because I think if I have to rely on my memory I'm not going to be able to get to the right spot in the mind map in an actual appointment where I need to come up with something to say relatively quickly.

3.4.3. Reflections on interdisciplinary care

Learners described their views on how the training has or is anticipated to facilitate improved care provision. For example,

… So my perceived benefit is a future hypothetical situation. But I have had a few complex cases over the years where I have tried to collaborate … and they've just said, "Well, if they're not doing what you tell them, then you should just discharge", and those conversations have always stopped me in my tracks, because that wasn't my intention and then I never knew where to go next, so I feel a little bit better equipped now to have a conversation … about how to proceed with that patient's care without discharging, so I mean I'd like to think that conversation will never happen again, but when it does, I feel like I have some tools now.

Learners further described being better able to collaborate and support readiness for change:

… when there's somebody in red light, I know what to do … I don't feel like, Okay, where do I go from here? Now I actually feel like I know where to go.

One learner described how the application of these behaviour change counselling skills changed their personal experience as a provider:

… Understanding more about the patient's perspective and collaborating, because so much of it is, there's a little bit of medicine, but although most of its behavior change, and … just made it a whole lot more rich to get on a call together, talk about things, bounce ideas off each other, and it creates this kind of framework for a lot of meaningful, meaningful dialogue, and it makes it fun.

Within health care teams, learners noted improved ability to communicate with colleagues and mentor others in behaviour change counselling skills:

… I find that I'm actually really enthusiastic to tell all of my dietitian colleagues about it, because we've quite big team. So I've now volunteered to update our obesity care plan, and I'm hoping to include some of the concepts in it.

Finally, training was linked to participating in broader healthcare

system level changes in obesity care, such as making a difference in addressing obesity bias:

> … I'd say I think obesity, like other chronic diseases, but especially obesity with the bias, is a team sport, and this kind of knowledge base helps me kinda see what that team could look like or what a program could look like to have a common language … So that we really are on the same page and working together that's been really key. So I think that's kind of the beginning of a foundation for making a bigger shift in healthcare.

3.4.4. *Learning culture and environment*

Learners found the program a safe, collaborative, nonjudgmental environment to "take risks" in trying out challenging new skills in front of their peers:

> … Yeah, I think when some of the opening lecture about moving from an expert to a collaborator, I agree that as teachers, [they] became collaborators right from the beginning, in terms of our learning experience, so it did feel like rather than [the facilitators] … being experts.. It felt like a partnership, and that I think, did create that safe environment for us to take risks and see how things go.

> … At the beginning I felt extremely overwhelmed. I felt that I was possibly way in over my head. A lot of the language, although I've had some training, was very, very new to me, and I wasn't really sure what it was about. But with the non-judgmental interactions it allowed me to stay engaged in this relationship.

4. Discussion

This paper reports on an observational study examining the level of competency achieved in obesity clinicians seeking training in behaviour change counselling. In our quasi-experimental one-group post-test only design, we have been able to document the achievement of competency in a broad range of component behaviour change strategies. Further, qualitative results of the learning experience encourage us to believe that the training itself had a profound impact on the practice of the learners. As a pre-experimental design, we believe that our training program is effective and follow up research should include randomization to a control condition and both pre-as well as post-training assessment.

Recent advances in the understanding and management of obesity provides hope for PwO. Much of this hope is associated with recent development of safe and effective medical therapies. Such interventions impact the appetite system is such a manner to reduce the drive to eat, resulting in sustained calorie deficits sufficient for significant sustained weight loss. This allows for the broadened application of the psychological and behavioural pillar of obesity management beyond the pursuit of sustained calorie deficits to living well, psychologically and physically, with obesity. It is critical to help PwO come to accept that weight is not a behaviour, to help them address expectations of treatment on goal weight and body shape, and to counter the impact of obesity stigma. However, to do this providers need to develop competency and confidence in behaviour change counselling beyond recommendations for eating and activity.

Implementing behavioural interventions is easier said than done, however. Few obesity providers are trained in the extensive array of behaviour change interventions. The evidence from this study suggests that our training model has been successful and, therefore, may contribute to comphrehensive obesity management. Learners report using many of the component skills at least half of the time, with the skills associated with establishing change-based relationships used with high regularity. Further, learners report using the skills in complex cases and receiving at least moderate levels of corrective feedback. Importantly, when role-plays were reviewed using the competency scale, we were able to validate the achievement of skill. At least 90 % of learners were rated moderately competent or higher on all component skills. Further, analysis of focus group transcripts confirms that learners valued the core aspects of training: the development of a mindmap promoting principles over specific methods, receiving corrective feedback, developing a community of practice, and utilizing the principle of repetition and relevance.

Our results also reflect how challenging it can be to become comfortable with the number of competencies involved in our framework. We see how additional opportunities to support trained providers in working with people who are not ready to change (in our model these are "red light situations") as well as becoming more comfortable with acceptance and mindfulness skills, and aspects of the psychosocial determinants of behaviour.

The successful learning journey requires the provider to reflect on their practice in light of a change based relationship which is focused around empowerment and collaboration. This might be easier said than done given the dominate nature of the preparation of many healthcare providers. Most HCPs are trained, either implicitly or explicitly, in the expert model of care; the expert clinician with the uninformed help-seeker [10]. This perspective establishes a inequitable relationship with PwO, and leads to a relational dynamic we characterize as teach and tell. This is not consistent with our definition of a changed-based relationship, which puts the PwO in the centre and requires the provider to ask and listen and use summaries to establish common ground [41] before making evidence-basd recommendations. As we heard from our learners, this is not an easy shift and one that we believe can be supported by creating a safe space for corrective feedback, and encouraging peer-to-peer learning. Critically important to our trainig model is the concept of the mindmap. The mindmap is where providers do not implement interventions in a standardized fashion but use the principles and skills of change-based relationships, assessing and promoting readiness, behaviour modification and addressing psychosocial determinants of behaviour in a fluid manner, guided not by a protocol but by reflection, collaboration, and a "try and test" perspective.

We justify our approach based on the teachings of Piaget; in particular Piaget's concepts of assimilation and accommodation [42]. Assimilation is when new information is added to existing schemas; status quo is maintained. We commonly see this when discussing motivational communication with providers, where providers react to presentations on motivational communication with "I already do that". This illustrates assimilation; the new information does not lead to new cognitive structures (schemata [43]). Accommodation is when the new information elicits disequilibrium and new schemas are developed. We believe this takes time, requires a collaborative and supportive relationship between teachers and learners, and empowers learners to link new schemas to existing schemas. This reinforces the importance of focusing on principles not just methods. For instance, implementing a specific behaviour change skill into the practice of a family physician would be different than into the practice of a dietitian or social worker due to differences in competencies, the nature of the patient-provider relationship and the goals of the provider and patient. We are sceptical that brief, time limited training programs can facilitate accommodation of new information and suspect that most existing training programs are more likely to elicit assimilation [10,44].

Evidence on the lived experience of obesity is such that stigma experienced within the healthcare system is a major barrier to care [45–47]. People with obesity do not view healthcare providers as a major source of support [48,49]. We believe that the principles of behaviour change counselling can help to establish a more functional and supportive patient-provider relationship. We believe that we have demonstrated improvements in these skills from the providers perspective. However, we did not collect any data on the experience of receiving care from the trained clinicians in this study. Our past work demonstrates a positive patient response to the principles underlying our approach [50], however the impact of training on patient outcomes

has yet to be evaluated.

Moving forward, this program will be fully integrated into the Obesity Canada learning pathway as an advanced training program. This program is complementary to many of OC's existing training initiatives, in particular the Certified Bariatric Educator certificate and the Calibre program (https://cpd.obesitycanada.ca). Scaling training will require the development of a cohort of supervisors to provide corrective feedback and streamlining training via self-directed modules and competency self-assessment.

5. Limitations

Limitations of this study include the potential lack of representativeness of the learners, in that only those motivated for training, and able to secure administrative support for training, were involved. Further, there was no pre-training assessment of competency, so the hypothesis that the high levels of competency demonstrated was not present pre-training cannot be ruled out, even in light of the evidence gleaned from the qualitative focus group interviews. As well, there was no follow up period to examine the maintenance of competency over time. Associated with this is the lack of data on the outcomes of training on the patient experience. Finally, the training program included a large number of component skills and there was inequity in the amount of attention given to the component skills.

6. Conclusion

- We have been successful in implementing a competency-based behaviour change counselling training program for obesity providers
- Quantitative evaluation confirms the development of competency, and
- Qualitative evaluation confirms the relevance and value of training.

Ethics

All learners consented to have their anonymized data analyzed and presented in the form of presentations and publications. Further, the focus groups sessions began with the following: "Before we begin we'd like to ask for your consent for the information to be used for program evaluation as well as anonymized information being shared in presentations and publications? If you agree please raise your hand". All participants consented.

Author contribution

MV developed the model of training in his work as lead of the Behaviour Change Institute (Nova Scotia Health & Dalhousie University). MV drafted the first draft of the manuscript. MV and TS were the facilitators of training and jointly conceived of the evaluation framework. MV and TS conducted the data analyses, interpreted the results and edited the manuscript.

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Declaration of artificial intelligence (AI) technologies

No AI technology was used for the conduct or preparation of this study.

Declaration of competing interest

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