

# Helping providers address psychological aspects of obesity in routine care: Development of the obesity adjustment dialogue tool (OADT)

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## ABSTRACT

**Background:** This study developed and validated a dialogue tool (Obesity Adjustment Dialogue Tool) to efficiently assess QoL and drive to eat for use in routine clinical care.

**Methods:** A 13-question interview was created, assessing the impact of living with obesity on quality of life and drive to eat. In a counter-balanced order, PwO were interviewed and completed the Obesity Adjustment Survey (OAS), the Impact of Obesity on Quality of Life-Lite scale (IWQoL), the Three Factor Eating Questionnaire (TREQ), and the Control of Eating Questionnaire (COEQ). Questionnaire results were used to validate the interview using correlational and concordance measures.

**Results:** 101 PwO consented and 98 completed all measures (mean BMI = 37.8; 30.7% Class III obesity). Correlations between the QoL dialogue tool and validated instruments (OAS, IWQoL) were moderate to high. Correlations between cravings questions and validated measures (TFEQ, COEQ) were high except for attempts to control eating. Correspondence based on categorizing both the dialogue tool and scales into high/low impact was high except for attempts to control eating (which was dropped from the final tool).

**Conclusion:** The Obesity Adjustment Dialogue Tool is a brief clinician-led structured interview which closely matches information derived from validated scales. This tool offers an efficient approach to incorporating QoL factors into obesity management.

## 1. Introduction

The last decade has seen a shift in how obesity is medically managed. Obesity is no longer seen as a personal failure to achieve goal weight by eating less, moving more through willpower [1,2]. There is now a recognition of: the complexity of weight gain in contemporary societies (the role of genetics, accessibility to hyper processed food, social inequity [3]); excess adipose tissue that actively impairs health [4,5]; and the complexity of the appetite system (counterregulatory neural systems that protect highest weight) [6]. Obesity has been reframed from a lifestyle choice to a chronic disease [5]. As such, providers are encouraged to adopt a chronic disease management framework [7] to collaborate with, and empower, individuals to participate in long-term treatment that integrates behavioural, pharmacotherapy and surgical interventions [3]. This contemporary view of obesity requires the clinician to have the skills and confidence to engage the PwO in a nonjudgmental collaboration, educate on effective therapies and create/support an ongoing approach to treatment through a positive patient-provider relationship. However, amongst the main barriers to obesity counselling are the perceived lack of time, low confidence in the

ability to counsel, perceived inadequate resources, and concerns over the efficacy of counselling [8–11].

Obesity is not only a major risk factor for a myriad of disease states it is a major source of psychological distress [12–16]. There is a bidirectional relationship between mental health concerns and obesity [17]. Further, PwO are interested in being supported by their providers to address the psychological aspects of obesity [18]. It may be that a functional patient-centered relationship [19] with PwO is enhanced by acknowledging the psychological impact of obesity. The goal of this study was to create a brief interview to aid providers in assessing important psychological aspects of living with obesity; specifically, the impact of obesity on aspects of quality of life and the role of food cravings (the drive to eat) [20]. Understanding the impact of obesity on quality of life can help to meet the needs of those living with obesity and perhaps moderate the experience of stigma and internalized bias [21, 22]. Further, understanding the drive to eat (a person's relationship with food) can help providers plan interventions. For example, does one start with a behavioural approach to eating changes or choose a medication to downregulate the drive to eat prior to behaviour therapy?

This study was facilitated by the concept of dialogue tools. Dialogue tools are structured interviews, are well received by patients [23], and

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**Abbreviations**

PwO	persons with obesity
BMI	Body mass index
OAS	Obesity adjustment scale
IWQoL	Impact of weight on quality of life
TFEQ	Three-factor eating questionnaire
COEQ	Control of eating questionnaire

involve a clinician guiding a person through a series of specific, sequential, questions to complete an assessment. Mental health diagnoses rest heavily on the use of these tools (e.g., the Structured Clinical Interview for Diagnosis [24] is the backbone of psychiatric diagnoses). Dialogue tools have recently been developed in diabetes to increase patient activation [25]. The PwO is likely to experience a dialogue approach as an invitation to contribute and an opportunity to be understood. To validate the utility of this newly developed dialogue tool for assessing quality of life and relationship with food in obesity the tool was modelled off existing, validated self-report scales: the Obesity Adjustment Scale (OAS) [26], the Impact of Weight on Quality of Life-Lite scale (IWQoL-Lite) [27], the Three Factor Eating Questionnaire (TFEQ) [28] and the Control of Eating Questionnaire (COEQ) [29]. The hypothesis for this study was: The newly developed dialogue tool correlates significantly with corresponding validated self-report scales.

**Table 1**  
Dialogue tool.

Impact of Weight on Quality of Life	Extent of Impact				
Instructions: <i>Would you be willing for me to ask you some structured questions about how your weight impacts your quality of life? [Wait for a response]. By structured questions, I mean I ask everybody these questions the same way and I ask you to give your answer using a rating scale.</i>					
Questions	Not At All	A Little	Moderately	A Lot	Extremely
After each question read the options					
In the past month to what extent has your weight negatively impacted your activities of daily living; by this I mean things like walking around, climbing stairs, getting up from chairs, maintaining personal hygiene, etc.?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, to what extent has your weight negatively affected your view of yourself and your body; by that I mean feeling self-conscious, disliking your body, or feeling less worthwhile because of your weight?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, to what extent have you been concerned that your weight will harm your health, by that I mean contributing to illness or shortening your life?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, to what extent has your weight caused you social distress; by that I mean feeling uncomfortable in public or being criticized or looked at because of your weight?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, to what extent has your weight affected your relationships; by that I mean not being supported by family or friends or avoiding intimacy or feeling less attractive to a partner?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
NOTE (do not read this to participant): This is a collective judgement about relationships: family, friends and intimacy. If asked to clarify about intimacy: To what extent has your weight affected your desire to be intimate with a partner e.g., have you felt less attractive, and so, less interested in being intimate?					
Overall, in the past month, to what extent do you feel distressed due to your weight; by that I mean things like feeling depressed because of your weight, not doing social things because of your weight, or feeling that you are too big to exercise?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Relationship with Food	Extent of Impact				
Questions	Not At All	A Little	Moderately	A Lot	Extremely
After each question read the options					
In the past month, to what extent have you been bothered by emotional eating; by that I mean eating when you feel anxious, depressed or lonely?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, to what extent have you been bothered by intense craving to eat; by that I mean not being able to stop eating when you start, wanting to eat if you seem something tasty even if you have just eaten, feeling like you can't stop eating, or that you are always hungry?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, to what extent do you try to control your desire to eat; by that I mean taking small portions, avoid foods you like or consciously hold back at meals?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, how strong has your cravings for sweet foods been; such as chocolate, pastries, fruit juices?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, how strong has your cravings for savory foods been, such as breads, pastas, burgers, fries, cheeses?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, how difficult has it been to control your eating; by that I mean frequent or strong cravings, or giving in to cravings?	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
In the past month, to what extent has your mood been positive, by that I mean feeling happy, content, alert and not anxious	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Further, potential correspondence between those who are rated high or low on the dialogue tool and those who score high or low on the self-report scales was evaluated.

**2. Methods**

**2.1. Dialogue tool development**

The author is a psychologist and researcher working in obesity since 1990 and part of a team (3 bariatric surgeons, 2 psychologists, a gastroenterologist) who developed the Obesity Adjustment Scale [26] (OAS) for use with bariatric surgery populations. The domains from which OAS items were generated included health concerns, functional disability, eating and activity, body dissatisfaction, distress over obesity, self-efficacy, social concerns, and social support. These domains were roughly matched to the domains of the psychometric scales.

There were two sections to the dialogue tool (OADT, see Table 1). Section 1 assessed the impact of current weight on activities of daily living (functional disability and activity from the OAS domains), self-esteem and body image (body dissatisfaction and self-efficacy from the OAS domains), self-perceived health (health concerns from the OAS domains), social distress and impact on close relationships (social support and social concerns domains of the OAS); and overall weight related distress (distress over obesity OAS domain). These questions included exemplars that roughly correspond to the subscales of the IWQoL, a proprietary scale.

Section 2 of the OADT assessed emotional eating, cravings in general,

cravings for sweets and savoury, difficulty controlling eating, attempts to control eating, and positive mood. These questions correspond to the subscales of the TFEQ (Emotional Eating, Uncontrolled Eating, Cognitive Restraint) and the COEQ (Cravings for Sweet and Savoury, Craving Control, Positive Mood).

2.2. Construct validity testing

Participants completed a series of standardized self-report quality of life assessment instruments used widely in the obesity field. These included:

**Obesity Adjustment Scale (OAS [26]).** This 20-item scale measures obesity related distress by assessing impact on activities of daily living, self-esteem and body image, self-perceived health; social distress; impact on close relationships; and overall weight related distress. This scale was validated for use in those living with obesity seeking bariatric surgery and yields a single score, with higher scores reflecting higher distress.

**Impact of Weight on Quality of Life-Lite scale (IWQoL [30,31]).** This 31-item validated scale yields scores for physical function, self-esteem, sexual life, public distress, and work function. Higher scores on this scale reflect better quality of life.

**Three Factor Eating Questionnaire (TFEQ [28,32]).** This 18-item scale has been extensively used in obesity research and yields three scores; emotional eating, uncontrolled eating, and cognitive restraint over eating, with higher scores indicating higher levels of the construct.

**Control of Eating Questionnaire (COEQ [29]).** This 17-item scale assesses the extent of cravings for sweets, for savoury, craving control as well as positive mood. Higher scores indicate higher levels of the construct assessed.

2.3. Participant selection

Participants were recruited through a support program run by Alio Health Services (Ottawa, Canada), contracted by Bausch Health to operate a nurse counselling program for patients on a specific oral medication for obesity management (Naltrexone-Bupropion). Interested patients were offered free counselling support, where registered nurses provide telephone-based counselling. At present, approximately 4000 Canadians participate in this program.

There were no exclusion criteria for recruitment. All individuals participating in the support program during recruitment were eligible and became aware of the study through the login page for the program. The login page provided study information and those interested could select to be contacted by their nurse about the study. Those indicating willingness were introduced to the study by their nurse in a subsequent follow up call, where informed consent was obtained, and arrangements were made to administer the protocol.

2.4. Procedure

Once consented into the study, five nurses trained in the

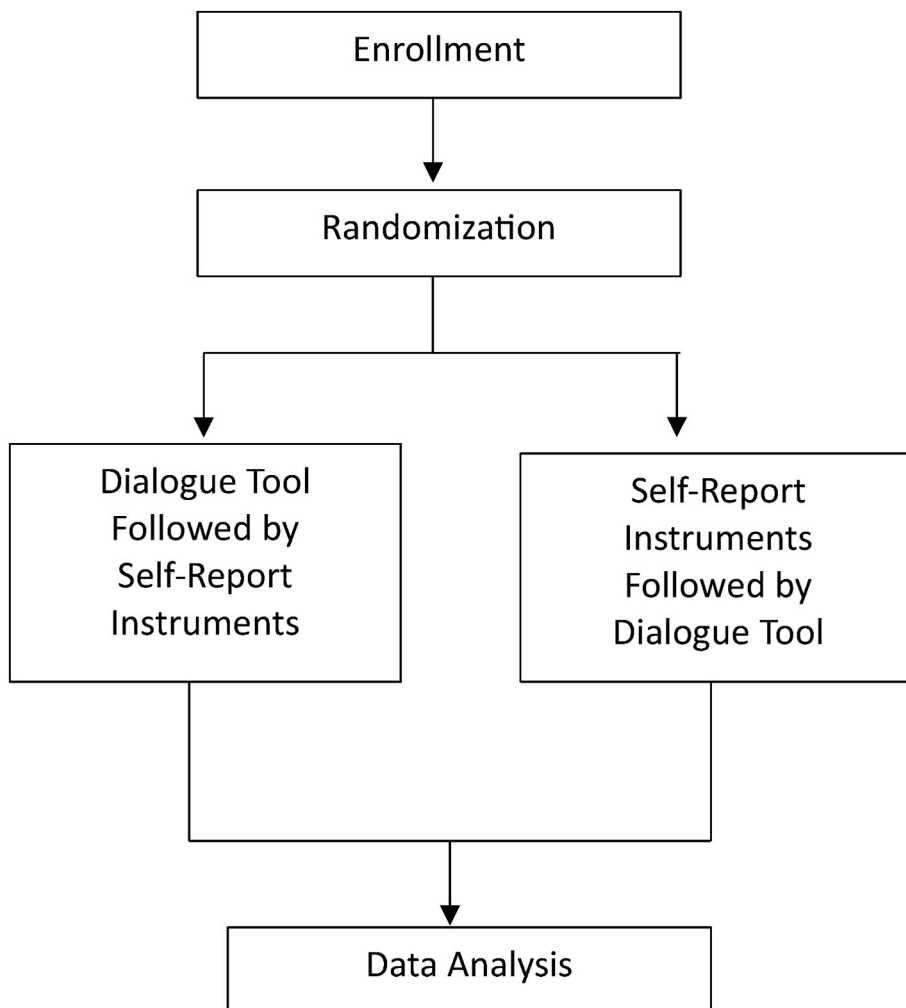


Fig. 1. CONSORT Study flow.

administration of the dialogue tool by the author conducted the interview and provided support (answered questions) to participants who completed the self-report scales during the call. All nurses were female, with an average of 6 years of experience in obesity care. All interviews were conducted virtually.

The rating scale for the OADT questions was emailed to the participant so they could reference it during the call. One-half of the participants were randomly chosen to complete the self-report scales before the interview with the other half completing the interview first, to counterbalance order of administration (see CONSORT diagram, Fig. 1). In addition to completing the study materials participants reported on age, gender, duration of living with obesity, height, current weight as well as highest adult weight. This study was approved by the Nova Scotia Health Research Evaluation Board (NSA REB # 1024779).

2.5. Data analysis

Data were analyzed by calculating Pearson correlation coefficients between specific question scores from the OADT with the corresponding self-report instrument subscale. In addition, descriptive statistics were computed from the scales and the demographic data. Concordance between the OADT scales and the self-report scales was examined as follows: for the self-report scales those who scored in the upper tertile (above the 67th percentile) and lower tertile (below the 33rd percentile) were recoded as either high or low impact, respectively. OADT item responses were also categorized into low impact (responses 1 or 2) or high impact (responses 4 or 5). Concordance was evaluated by calculating percent agreement of low and high impact between the two methods of assessment as well as by calculating Cohen’s Kappa statistic (to measure agreement beyond chance).

3. Results

3.1. Participants

101 PwO consented to this study, with 98 completing all study measures. Participant demographics are presented in Table 2. Most participants were female (82.2%) with an average age of 50.25 years. Mean BMI was 37.76 (30.7% obesity Class 3, 33.7% in Class 2, 23.8% in Class 1, and 11.9% in the overweight category). Mean obesity duration was 28.02 years. Current BMI is significantly lower than highest reported adult BMI (44.50,  $p < 0.001$ ; the majority of whom had been in Class 3 obese at their highest weight).

Table 2 Demographic characteristics of the sample.

		% (N)
Gender	Male	17.8% (18)
	Female	82.2% (83)
		Mean (SD)
Age		50.25 (11.8)
BMI - Current		37.76 (7.62)
BMI - Highest		44.50 (8.08)
Duration of Obesity		28.02 (15.2)
		% (N)
Current Weight Status	Overweight	11.9% (12)
	Class 1	33.7% (34)
	Class 2	23.8% (24)
	Class 3	30.7% (31)
Highest Weight Status	Overweight	1.0% (1)
	Class 1	9.9% (10)
	Class 2	24.8% (25)
	Class 3	64.4% (65)

Table 3 Correlations between dialogue tool and self-report scales.

Dialogue Tool Quality of Life	Self-Report Scale	p value	Dialogue Tool Relationship with Food	Self-Report Scale	p value
	IWQoL Physical Functioning			TFEQ Emotional Eating	
Activities of Daily Living	-0.701	< 0.001	Emotional Eating	0.628	< 0.001
Health Concerns	-0.475	< 0.001	Uncontrolled Eating	TFEQ Uncontrolled Eating	0.603
Self-Esteem	-0.757	< 0.001	Cravings Savoury	COEQ Cravings Savoury	< 0.001
	IWQoL Self Esteem		Cravings Sweet	TFEQ Cognitive Restraint	0.335
	IWQoL Public Distress		Cravings Sweet	COEQ Cravings Sweet	< 0.001
Social Distress	-0.491	< 0.001	Difficulty with Eating Control	COEQ Cravings Control	-0.731
	IWQoL Work		Positive Mood	COEQ Positive Mood	0.511
Relationship Impact	-0.561	< 0.001			< 0.001
	IWQoL Sexual Life				< 0.001
Obesity Distress	-0.656	< 0.001			< 0.001
	OAS Distress				< 0.001
	0.734	< 0.001			< 0.001

3.2. Correlations between OADT and self-report scales (Table 3)

3.2.1. Quality of life

The physical activity and health concerns ratings of the OADT were significantly correlated with the IWQoL physical functioning scale (-0.701 and -0.475; correlations were negative because the IWQoL assesses positive impact and the OADT assesses negative impact). The self-esteem rating of the OADT correlated significantly with the IWQoL self-esteem scale (-0.757). The social distress rating of the OADT correlated moderately and significantly with the IWQoL public distress and work subscales (-0.491 and -0.561). The relationship impact rating of the OADT correlated significantly with the IWQoL sexual life scale (-0.656). Finally, the obesity distress rating of the OADT correlated significantly with the OAS total score (0.734). In all cases the significance level for these correlations was less than 0.001 and the percentage of shared variance ranged from 22.6% to 53.9%.

3.2.2. Relationship with food

The OADT ratings of eating behaviour were correlated with the TFEQ and COEQ. There were strongly positive correlations between the TFEQ emotional eating (0.628) and uncontrolled eating scales (0.603) and the corresponding OADT ratings (Table 3). The OADT attempts to control eating rating was only moderately correlated with TFEQ cognitive restraint scale, however (0.335). Highly significant correlations resulted between the OADT rating of cravings for sweets (0.767) and savoury foods (0.733) and the corresponding COEQ scales. The OADT rating of difficulty controlling eating and the COEQ cravings control scale (-0.731) were strongly correlated as well (the negative correlation is because the COEQ is scored such that higher scores indicate greater control, opposite from scoring of this OADT item). Finally, there was a moderate correlation between the positive mood COEQ scale and the OADT rating (0.511). All correlations were highly significant ( $p < 0.001$ ) and the percentage of shared variance ranged from 11.2% to 58.8%.

To further explore the value of the OADT responses into high and

low impact on the items of the OADT and the subscales of the psychometric scales (see Methods). These results were analyzed by comparing percent concordance (also using Cohen’s Kappa), and mean self-report scale scores between the high and low OADT categorization were compared using t-tests. Results are displayed in Table 4.

The activities of daily living and the health concerns OADT ratings were evaluated against the IWQoL physical function scale. There was high correspondence between measures; 81.6% overlap in the low impact group and 100% overlap in the high impact group on activities of daily living (Kappa = 0.686, p < 0.001) and 92.9% correspondence on low impact and 72.2% correspondence on high impact for the health concerns (Kappa = 0.507, p < 0.001) OADT. The mean scores on the IWQoL physical function scale were significantly different between the high and low impact groups on both OADT assessments (p < 0.001).

Similar results resulted for the OADT self-esteem rating. Correspondence was 89.5% for low impact and 88.9% for high impact when comparing to the IWQoL self-esteem scale (Kappa = 0.743; p < 0.001). Mean scores were highly discrepant between the high and low OADT categorization on the IWQoL self-esteem scale (p < 0.001).

The social distress assessed with the OADT was compared with the IWQoL public distress and work scales. In both cases, there was ~75% correspondence in low impact groups and 75–80% correspondence for high impact groups between the measures (Kappa = 0.451, p < 0.001 for Public Distress and = 0.444, p < 0.001 for Work). Those in the OADT low impact group scored significantly different from the high impact group (p’s < 0.001).

The OADT relationship impact rating was compared to the IWQoL sexual life scale. Of those identified as having low impact on the OADT 80% were similarly categorized using the IWQoL scale. Over 90% of the OADT high impact group were high impact on the IWQoL scale (Kappa

**Table 4**  
Correspondence between dialogue tool and self-report QoL scales.

DIALOGUE TOOL		VALIDATED SELF-REPORT SCALES				
		IWQoL Physical Function				
		Low Impact	High Impact	Kappa	Mean (SD)	p value
Activities of Daily Living	Low Impact	81.6%	18.4%	0.686	72.50 (17.13)	< 0.001
	High Impact	0%	100%	< 0.001	34.78 (14.00)	< 0.001
Health Concerns	Low Impact	92.9%	7.1%	0.507	76.86 (15.44)	< 0.001
	High Impact	27.8%	72.2%	< 0.001	52.68 (22.50)	< 0.001
IWQoL Self-Esteem	Low Impact	89.5%	10.5%	0.743	69.46 (26.34)	< 0.001
	High Impact	11.1%	88.9%	< 0.001	18.95 (16.66)	< 0.001
	High Impact					
IWQoL Public Distress	Low Impact	75.8%	24.2%	0.451	77.40 (21.39)	< 0.001
	High Impact	20.0%	80.0%	< 0.001	47.62 (32.20)	< 0.001
	Low Impact	76.3%	23.7%	0.444	85.12 (17.63)	< 0.001
	High Impact	25.0%	75.0%	< 0.001	58.63 (30.90)	< 0.001
IWQoL Sexual Life	Low Impact	80.0%	20.0%	0.580	76.10 (23.91)	< 0.001
	High Impact	9.5%	90.5%	< 0.001	27.78 (28.62)	< 0.001
	Low Impact	88.5%	11.5%	0.804	2.32 (0.65)	< 0.001
	High Impact	8.0%	92.0%	< 0.001	3.73 (0.62)	< 0.001

= 0.580; p < 0.001). Highly significant differences in mean scores between OADT low and impact groups resulted for this scale (p < 0.001).

Finally, the distress over obesity OADT categorization corresponded well with the OAS. For low impact, 88.5% correspondence was found. For the high impact group 92% correspondence was found (Kappa = 0.804; p < 0.001). OAS scores were significantly higher in the high impact OADT group compared to the low impact group (p < 0.001).

Correspondence in rating using the OADT and the self-report scales for eating behaviour are displayed in Table 5. The OADT emotional eating rating corresponded highly for both low impact (81.5% correspondence) and high impact (86.7% correspondence) groups (Kappa = 0.683, p < 0.001), with significant difference between the TFEQ emotional eating scale and the OADT low/high categorization (p < 0.001). For the OADT rating of uncontrolled eating compared with the TFEQ uncontrolled eating scale correspondence was high for low and high impact groups (78.1% and 94.1%, respectively; Kappa = 0.667, p < 0.001) with strong differences between the OADT categorizations and the TFEQ uncontrolled eating scale means (p < 0.001). However, the OADT rating of attempts to control eating did not correspond well with the TFEQ cognitive restraint scale. Correspondence rates did not differ (Kappa = 0.063, ns) and mean TFEQ cognitive restraint did not differ for the OADT categorization (ns).

Regarding correspondence between OADT and COEQ measures the following resulted. Correspondence for cravings for savoury and for sweets was very high for those in the low impact group (81.3% and

**Table 5**  
Correspondence between dialogue tool and relationship with food scales.

DIALOGUE TOOL		VALIDATED SELF-REPORT SCALES				
		Three-Factor Eating Questionnaire – Emotional Eating				
		Low Impact	High Impact	Kappa	Mean (SD)	p value
Dialogue Tool Emotional Eating	Low Impact	81.5%	18.5%	0.683	2.03 (0.67)	< 0.001
	High Impact	13.3%	86.7%	< 0.001	3.12 (0.59)	< 0.001
Dialogue Tool Uncontrolled Eating	Low Impact	78.1%	21.9%	0.667	1.92 (0.58)	< 0.001
	High Impact	5.9%	94.1%	< 0.001	2.78 (0.56)	< 0.001
	High Impact					
Dialogue Tool Attempts to Control	Low Impact	64.7%	35.3%	0.063	2.64 (0.53)	ns
	High Impact	57.9%	42.1%	ns	2.76 (0.61)	ns
	High Impact					
Dialogue Tool Cravings Savoury	Low Impact	81.3%	18.8%	0.757	2.15 (0.68)	< 0.001
	High Impact	0.0%	100.0%	< 0.001	3.72 (0.72)	< 0.001
Dialogue Tool Cravings Sweet	Low Impact	93.1%	6.9%	0.935	2.03 (0.71)	< 0.001
	High Impact	0.0%	100.0%	< 0.001	3.71 (0.46)	< 0.001
	High Impact					
Dialogue Tool Difficulty with Eating Control	Low Impact	88.2%	11.8%	0.782	1.75 (0.91)	< 0.001
	High Impact	0.0%	100.0%	< 0.001	3.75 (0.65)	< 0.001
	High Impact					
Dialogue Tool Positive Mood	Low Impact	85.7%	14.3%	0.473	2.94 (0.84)	< 0.001
	High Impact	30.3%	69.7%	< 0.001	3.74 (0.74)	< 0.001
	High Impact					

93.1%, respectively) and at 100% for the high impact group (Kappa = 0.757 and 0.935,  $p$ 's < 0.001). In both cases the COEQ means differed significantly between those categorized as low or high impact on the OADT ( $p$  < 0.001). Similar results were found for the OADT rating of difficulty with eating control. When comparing classification using the COEQ cravings control scale correspondence was 88.2% for low impact and 100% for high impact (Kappa = 0.782,  $p$  < 0.001), with significant COEQ cravings control differences for those rated as low or high impact using the OADT ( $p$  < 0.001). Finally, correspondence for those categorized as low impact on the positive mood item was strong compared to those categorized as low mood on the COEQ positive mood scale (85.7%), but correspondence was only moderate for those categorized as high positive mood (69.7%; Kappa = 0.473,  $p$  < 0.001). Those categorized on the dialogue tool into low and high impact showed significant differences on the COEQ positive mood scale ( $p$  < 0.001).

#### 4. Discussion

Reframing obesity from personal failure to eat less and move more using willpower to obesity as a chronic medical condition best managed through ongoing professional intervention offers hope to those living with this debilitating condition [3]. However, embracing the complexity of obesity and centering care around the experience of the individual makes it important for emerging medical therapies to develop hand in hand with therapies that support the quality of life of PwO. Research supports the ongoing negative impact of obesity on quality of life [33]. As such, lived experience outcomes (patient reported outcomes [34]) of obesity treatments need to be given weight in addition to biomedical outcomes [18,35]. This is clearly the rationale behind Obesity Canada's promotion of the concept of Best Weight [36], defined as the weight that a person can achieve and maintain while living their healthiest and happiest life.

A major challenge to the effective implementation of the chronic care model and the concept of Best Weight in obesity management is the lack of system resources to address quality of life factors. Healthcare providers commonly acknowledge the importance of psychosocial factors in chronic disease management (see Refs. [37,38]) yet cite insufficient time, training, confidence and resources as major barriers to engaging in quality of life assessment and management [39]. The first step to overcome these barriers is to develop scalable ways to assess the quality of life impact of living with obesity in PwO. For this reason, in combination with the importance of the patient-centered method in the clinical management of obesity, this study developed a dialogue tool to assess quality of life and relationship with food factors. If a provider can invite the PwO to have a conversation about these issues in a manner that leads to an understanding of the degree of impact on these dimensions, it follows that treatment can balance medical management with psychological management. This perspective is consistent with the recent Canadian Clinical Practice Guidelines for the Management of Obesity in Adults [3] in that obesity management is based around medical nutrition therapy, healthy physical activity and medical adherence supported by psychological/behavioural, medical and surgical interventions. Currently, medical and surgical interventions (recommendations and support for adherence) are considered in the care model of the provider but not so much the behavioural and psychological components of intervention. There is precedence for widespread use of a brief psychological screening process with instruments such as the PHQ-9 [40].

Our study has been able to establish the possible value of a dialogue tool to assess the quality of life and relationship with food aspects of a PwO's functioning. We validated this new tool against established and accepted self-report instruments suggesting that this tool validly assesses quality of life and drive to eat constructs. A value of this newly developed tool over existing self-report scale is that, as a dialogue tool, the assessment occurs in the context of the patient-provider relationship. A core aspect of the treatment of chronic disease is to have a functional collaboration relationship with a healthcare provider. This requires a

provider who has the ability and motivation to assess and integrate quality of life factors into their care plan. We believe this tool provides support to providers to be able to do so.

Our results showed that, for the most part, the newly developed dialogue tool did a good job of mirroring the assessment using validated instruments. Examining the quality of life impact of living with obesity, correlations between the dialogue tool assessment and self-report show strong relationships. Increases in the clinician rated impact on the dialogue tool items correlated highly with most of the scales. Regarding an overall assessment of obesity distress the correlation with the OAS total score was over 0.73. Further, when respondents were categorized into high and low impact groups on the dialogue tool, there was a strong correspondence with the upper and lower tertiles of the OAS scale. The mean OAS score for those categorized a high distress by clinicians was over 2 standard deviations above the mean OAS score for those categorized as low distress by clinicians. Similarly strong associations (high correlations, strong correspondence in categorizing low/high impact, and over 2 standard deviation unit difference in self-report instrument score between low and high clinician categorized respondents) occurred for activities of daily living, self-esteem, and relationship impact. The health concerns and social distress clinician categorizations also corresponded strongly with the corresponding IWQoL scales, although the mean difference was between 1 and 2 standard deviation units.

Similarly strong associations between the clinician categorization of impact regarding relationship with food items were found in this study. Specifically, categorization on dimensions of emotional eating, uncontrolled eating, difficulty with eating control, as well as cravings for savoury or sweet showed very high correspondence with the self-report scales. Both percentage of correspondence and difference in means were very strong for these ratings. The clinician rating of positive mood also showed strong correspondence and mean differences, although not quite to the extent of the other items. The rating of attempts to control eating did not perform as well. The correspondence was not high (and percentage did not differ from random) and the mean differences on TFEQ Cognitive Restraint did not differ between those rated by clinicians as low or high impact. The next step in this research is to evaluate the replicability of these results, the patient's experience of the dialogue tool, and its responsiveness to intervention. While strong relationships between the dialogue tool ratings and self-report were found in this study it bears mentioning that participants were on a medication that reduced cravings, highlighting the need to replicate this study in a different sample.

Using a dialogue tool for understanding quality of life and drive to eat factors may facilitate these important constructs becoming a routine part of the patient-provider relationship. This may empower the PwO by collaborating with the provider in navigating the challenging psychological aspects of obesity management. Research has suggested that PwO want their providers to address the emotional and psychological aspects of living with obesity [18] and this dialogue tool can support providers in achieving this. As well, the evidence is clear that weight reduction is associated with improvements in quality of life [33,41]. As such, using this dialogue tool can help providers focus on the positive outcomes of obesity management beyond weight loss. Given that PwO typically experience a plateau in weight loss regardless of treatment, it is easy for PwO to feel that treatment is not working when a plateau in weight loss occurs. Having alternative measures of success can help clinicians reframe success from only weight loss to weight loss along with health gains, including quality of life and drive to eat.

While this study adds value to the clinical management of obesity, it is not without limitations. Study participants were not selected from the general population but recruited from a patient support program for those receiving medical therapy for obesity. As such, they can be expected to have been diagnosed and treated for their obesity and were not naive to contemporary medical therapies. The fact that there was a difference in BMI between current weight and highest adult weight suggests that participants were being successfully treated. Further, these

participants were receiving a therapy known to reduce cravings. As well, they were receiving ongoing behavioural and supportive counselling from obesity expert nurses. Replication of this study in a broader sample of PwO is needed. However, the internal validity of the study is not impacted by the sample, since both measures were administered to all participants. If anything, the range of quality of life scores might be expected to be truncated in this sample, making it harder to show covariance between the measures. While the sample size for this study is reasonable, it is not large. It will be important to have sample sizes sufficient to identify sample differences on a number of criteria, including gender, BMI category, diversity, etc. Finally, the data for this study were selected to validate the content of the OADT items by comparing them to existing scales. What is now needed is to demonstrate changes in quality of life and drive to eat with interventions such as anti-obesity medication or other treatment.

### Author contribution

MV conceived of the study, created the dialogue tool, supervised the running of the study, conducted the data analyses and wrote the paper.

### Ethical review

This study was approved by the Nova Scotia Health Research Evaluation Board (NSA REB # 1024779).

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### Declaration of competing interest

Michael Vallis, PhD R Psych:

Ad Boards and Consultations:

- Abbvie, Abbott, Bausch Health, Boehringer Ingelheim, Lifescan, Lyceum, Novo Nordisk, Roche, Sanofi.

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