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Effectiveness of treatment for adolescents and adults with anorexia nervosa in a routine residential setting

Kate Hiney-Saunders (1)

Leah Ousley (2)

Jeanette Caw (2)

Emma Cassinelli (2)

Glenn Waller (1)

(1) Department of Psychology, University of Sheffield, UK

(2) Riverdale Grange Eating Disorders Clinic, Sheffield, UK

Corresponding author:

Glenn Waller, Department of Psychology, University of Sheffield, 1 Vicar Lane, Sheffield S1 2LT, UK. Telephone: +44-114-222-6568. E-mail: g.waller@sheffield.ac.uk

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Abstract

Residential treatment is a necessary element of treatment in some cases of anorexia nervosa, where it is used prior to transitioning to complete the treatment in a less intensive setting. This study tests how effective residential treatment is at helping adolescent and adult patients to reduce their eating pathology to levels that can be managed in outpatient settings. Ninety-eight patients with anorexia nervosa started treatment in a routine residential setting (83 completers). The adolescent and adult groups showed comparable levels of benefit, showing gains in weight and reductions in eating pathology, compatible with transitioning to less intensive treatment. Change was particularly substantial over the first six weeks. This effectiveness study has shown that an appropriate period of residential treatment can be used to prepare patients to be able to benefit from a less intensive treatment, regardless of age group.

Key words

Anorexia nervosa; residential; treatment; adult; adolescent; effectiveness

Effectiveness of treatment for adolescents and adults with anorexia nervosa in a routine residential setting

Treatments for anorexia nervosa are generally less effective than comparable treatments for non-underweight weight eating-disordered patients (e.g., Watson & Bulik, 2013). While several outpatient therapies for anorexia nervosa have been developed and trialled in recent years (e.g., Byrne et al., 2017; Fairburn et al., 2013; Schmidt et al., 2015; Zipfel et al., 2014), their recovery rates remain low, particularly when considering the key outcome variable of weight gain (Bulik et al., 2007). Furthermore, there are no medications that appear to be effective for anorexia nervosa at present. Combined with the level of physical risk associated with low weight and related behaviours, it is unsurprising that there is a greater use of hospitalisation for such patients than for non-underweight eating-disordered patients. That level of hospitalisation varies substantially across cultures, as a result of different insurance systems, targets, use of public vs private care, etc.

Given this variance in implementation of residential (in-patient) treatment and the high associated costs, it is noteworthy that there has been little controlled examination of the outcomes and costs of residential treatment for anorexia nervosa relative to other approaches. The lack of adequate randomised controlled trials led NICE (2017) and Hay et al. (2019) to conclude that there is little evidence to support the hypothesised effectiveness of residential treatment settings for anorexia nervosa. A number of less controlled clinical studies have been presented, but they have substantial methodological variations (e.g., population, treatment, duration, outcomes measured), making it hard to draw firm conclusions about the effectiveness of such interventions. For example, Gowers et al. (2010) showed that there was substantial post-treatment weight loss and attrition following at least six weeks of residential treatment for adolescents with anorexia nervosa. In contrast, Brewerton and Costin (2011) found that a mean of 94 days of residential treatment for adults with anorexia nervosa was associated with positive longer term outcomes (body mass index [BMI] and eating attitudes), especially where the patient ended treatment with a higher discharge BMI. Fewell et al. (2017)

showed positive benefits in terms of BMI, eating attitudes and for a mixed group of adult and adolescent anorexia nervosa patients, with those benefits sustained into follow-up. However, their care involved a mix of residential care and partial hospitalisation, so the duration and impact of residential care per se cannot be determined. Furthermore, their outcomes were against a relatively high starting BMI (mean = 17.6). McHugh (2007) showed a positive BMI change and changes in restrictive attitudes among adolescents who undertook a mean of 28.5 days of residential treatment for anorexia nervosa, but did not report follow-up outcomes. Finally, while Dalle Grave et al. (2013, 2014) have reported positive outcomes of a relatively long CBT-based residential programme for both adults and adolescents, the weight gain was not fully maintained into follow-up, particularly for adults. Given this mixture of outcomes, there are clearly some benefits, but they are inconsistent. It could be argued that residential treatment is not an effective way of helping patients to achieve full recovery, and might even result in negative outcomes, such as institutionalisation.

Despite these limitations, it is clearly important to use residential treatment for some patients with anorexia nervosa, given the level of risk and the limited impact of evidence-based outpatient therapies (e.g., Bulik et al., 2007; National Institute for Health Care Excellence [NICE], 2017). Therefore, a strategic use of residential treatment is recommended within the NICE guidelines (NICE, 2017), where residential care (if necessary) can be used initially to ensure that the patient is safe, and then to begin addressing weight gain and psychological issues, but is not used to take the patient all the way to recovery. Such an approach means that any specialist residential anorexia nervosa treatment facility needs to be coordinated with local day- or outpatient facilities, to ensure that the patient transitions to the next stage of treatment effectively, in order that chances of long-term recovery are maximised.

This stepped approach is relatively widely used in real-world settings. However, there is little evidence for its effectiveness. It is important to demonstrate that this approach can result in patients achieving adequate physical gains (especially BMI). However, it is equally necessary to demonstrate the psychological improvement (particularly improved eating attitudes) that is consequent on improved nutrition and reduced starvation effects (e.g., Waller

& Raykos, 2019), and which tends to be found relatively quickly and across therapies (e.g., Byrne et al., 2017; Waller et al., 2013). With that evidence in place, one can support the effectiveness of residential treatment being used to prepare patients for finalising weight and psychological gains in a less intensive setting. It is also important to consider whether this approach works differentially for adolescents and adults with anorexia nervosa, given that treatments, settings, legal powers and targets can differ substantially for these age groups (e.g., NICE, 2017). If outcomes and retention rates differ, then it might be necessary to modify this treatment approach for different age groups. In addition to age, it is important to determine whether other predictors of outcomes need to be taken into account. Pre-treatment pathology and early treatment response have each been considered as potential moderators and mediators of treatment outcome for eating disorders (e.g., Vall & Wade, 2015), but this area is less well explored in more intensive treatment settings.

Therefore, the primary aim of this effectiveness study in a routine clinical setting was to determine whether residential treatment results in the intended clinical improvements (as opposed to aiming for full recovery), and whether that impact differs between adults and adolescents. Retention rate will also be compared across the two age groups. The secondary aim was to determine whether eating characteristics at the start of treatment were associated with greater or lesser improvement, and whether the level of early change in eating characteristics and weight/BMI predict outcomes of such an residential programme.

Method

Design and ethical considerations

The study used a case series design, considering change during residential treatment for adult and adolescent patients with anorexia nervosa. As this work reflects a service evaluation of existing practice, it did not require ethical clearance under UK National Health Service protocols.

Participants

All participants were female in-patients in a specialist eating disorders unit, undertaking a treatment for anorexia nervosa. Each was diagnosed by a specialist psychiatrist at entry to

the programme, using DSM-5 criteria (American Psychiatric Association, 2013). In the UK, such a programme is usually implemented when the patient has not been able to benefit from outpatient care in the first instance. In keeping with NICE (2017) guidance, this period of residential care is focused on ensuring that the patient progresses to being able to transition into outpatient care to complete their recovery. The core targets during this residential treatment are increased weight and attitudinal/behavioural change. However, the programme does not aim at effecting full recovery (e.g., stable and normal weight; quality of life; abstinence from behaviours; normalised body image), as this is the target of the subsequent outpatient treatment in local services.

Ninety-eight patients started the treatment programme, and 83 completed it (see below). All met full DSM-5 criteria for anorexia nervosa. Thirty-five of the completers were adults (mean age = 27.2 years, *SD* = 11.0) and 48 were adolescents (mean age = 14.9 years, *SD* = 1.22). Intention-to-treat and completer analyses were both used.

Measures and Procedure

Two measures were used to determine outcome of this anorexia nervosa treatment. *Body mass index* (BMI) was calculated weekly, based on objectively measured height and weight. The *Eating Disorders Examination Questionnaire* (EDE-Q version 6; Fairburn, 2008) is a self-report measure, which was used to assess eating pathology at the beginning of treatment, at week 6, and at the end the treatment. The EDE-Q has strong psychometric properties (Berg, Peterson, Frazier & Crow, 2012), and includes scales addressing weight concerns, eating concerns, shape concerns, and restraint, as well as a composite Global scale. Finally, attrition was noted as an outcome if the patient opted to leave the therapy programme before the treatment reached the planned goals.

Treatment

The treatment programmes for the adults and adolescents had common elements, though they diverged in terms of the psychological therapy used, the level of family involvement and the degree of occupational therapeutic input.

All individuals were prescribed a weight gain diet, under medical and dietetic

supervision. The mean target weight gain was in the range of 0.5-1 kg/week. Adults and adolescents were assessed for individual therapies and, according to their clinical formulations, received a combination of cognitive behavioural therapy, body image therapy, and creative arts therapies. Adolescents routinely received family therapy, while adults were referred to family therapy when this was required. Parents and carers/family members of all patients were invited to attend a six-week course based on the Maudsley skills for carers approach (Hibbs et al., 2015) and a carers' forum. Adolescents participated in a family meals and exposure programme, which involved meals being held first at the treatment setting and later at home (supported by team staff). In addition, a graded programme of snacks and meals out was implemented with both groups of patients (supported initially by team staff and then by carers). Support to eat at home was available to adults if required.

Once at a healthier weight (75% of expected BMI for age), adolescents attended the in-house school. Later in treatment, they were supported with a gradual integration to their own school, which coincided with increasing amounts of overnight home leave. Adults received occupational therapy input, which focused on group therapeutic activities, healthy ways with food and mindfulness, as well as a range of activities to support engagement in work, social and leisure activities. Both adults and adolescents had access to therapeutic massage and a weekly movement meditation group. Patients' care was planned and routinely reviewed at four- to six-weekly intervals, and progress against treatment goals was monitored through weekly team meetings.

Completion of the programme was determined primarily by the clinical team judging that the individual patient had made enough progress to demonstrate that they would be able to use less intensive treatment. Usually, that required the patient to have gained a substantial amount of weight (reaching a BMI of c.17-18) and to have shown a substantial improvement in eating attitudes (towards or into the sub-clinical range, marked by a score of <2.77 on the EDE-Q Global score). In some cases, treatment extended slightly beyond that point, while transition to the next service was arranged.

Data analysis

Data were analysed separately for adolescents and adults, using completer and intention-to-treat (last number carried forwards) analyses. SPSS v.22 was used throughout. ANOVAs were used to determine any change in BMI and EDE-Q scores across the three time points, with post hoc Tukey tests used to determine pairwise differences. Effect sizes were measured using partial eta^2 (large effect size = 0.14). Retention/attrition rates were compared across the two age groups using chi-squared tests. Pearson's correlations were used to test the second aim, determining whether start of treatment characteristics or early change (over the first six weeks) predicted outcomes.

Results

Group characteristics

Table 1 shows the 'start of treatment' characteristics of the adult and adolescent groups. The BMI and EDE-Q scores were in the range that one would normally expect to see for such groups. The adolescent group's mean BMI for age was in the first centile. With the exception of age, there were no significant differences between the groups. It should be noted that the mean duration of treatment was relatively long compared to what would be on offer in many countries and under different insurance systems, though not as long as it would be in others.

Insert Table 1 about here

Clinical outcomes during residential phase of treatment

Table 2 shows changes in BMI and EDE-Q scores for the adults and the adolescents, using completer analyses to compare scores at the start of treatment, at week 6 of treatment, and at the end of treatment. In each group, BMI increased across the three time points, with the adults increasing their BMI by 2.9 points, and the adolescents moving from the 1st to the 16th BMI centile for age. EDE-Q scores reduced substantially, with very large effect sizes. For both groups, the mean EDE-Q Global scores were within the normal range (< 2.77 = one SD

above the population mean) by the end of the residential phase of treatment. It is noteworthy that EQE-Q Shape concerns did not reduce until the latter part of therapy, suggesting that such cognitions improve after other cognitive elements of eating pathology. The only difference between the groups was that the EDE-Q Restraint score did not continue to decrease among adults, while it did for the adolescents.

Insert Table 2 about here

Considering the intention-to-treat analyses, Table 3 shows that the pattern of findings was broadly similar to those found in the completer analyses, with the expected lower level of effect (though all the effect sizes remained very large). Therefore, it can be concluded that this residential phase of treatment was effective in reducing the adults' and adolescents' eating pathology and increasing their BMI in line with the clinical aim - improvement so that the patient can transition to local services for continuation of their care in an outpatient setting. It is particularly noteworthy that the first six weeks of treatment resulted in a large proportion of that gain.

Insert Table 3 about here

Discharge routes for adult and adolescent patients

Of the 94 patients for whom discharge route data were available, there was a tendency for adults to self-discharge more often than adolescents (16 out of 40 adult patients [40%] vs 13 out of 54 adolescents [24.1%]). However, this association was not significant (X^2 = 2.73, *df* = 1, two-tailed *P* = .098).

Impact of pre-treatment eating characteristics on levels of symptom change

To reduce the risk of Type 1 error, the remaining analyses will use the intention-to-

treat approach only. Table 4 shows the correlations (Pearson's *r*) between the patients' EDE-Q scores and BMI at the start of treatment and the level of change that they achieved across the course of their residential care, to determine whether there were any pre-treatment predictors of a poorer outcome. There was very little linkage between those early symptoms and change, among either adults or adolescents. The most consistent pattern was that lower-BMI adult and adolescent patients gained more weight across the course of treatment. The only other association was among the adolescents, who were more likely to show improvement in their global eating pathology if they began with more negative body image. To summarise, the only effects found were that those patients with more negative initial eating pathology were likely to benefit more (rather than less).

Insert Table 4 about here

Impact of early change in eating on later levels of symptom change

Pearson's *r* correlations were also used to determine whether there was any association of early change in EDE-Q scales and BMI (sessions 1 to 6) with subsequent change in overall EDE-Q Global score and BMI (session 6 to end of treatment). These analyses were carried out separately for adults and adolescents. There were no such associations among adolescents ($P > .19$ in all cases). The same was true among adults ($P > .15$ in all cases) with one exception – poor levels of early change in EDE-Q Shape concerns were associated with more positive later changes in overall EDE-Q scores ($r = -.344$; $P < .03$).

Association of duration of treatment with levels of symptom change

Pearson's *r* correlations were used to determine whether the duration of treatment was positively associated with the level of change across therapy. Among the adults, there was no association of treatment duration with change in EDE-Q Global scores ($r = -.02$; *NS*), but there was a positive association of duration with BMI change ($r = .594$; one-tailed $P < .02$). Among adolescents, there were no significant associations of treatment duration with changes in

EDE-Q Global scores and BMI (respectively - r = -.085 and r = .343, *NS*). These findings support the use of a longer residential stay among adults where the individual has poorer eating characteristics at the start of treatment.

Discussion

The primary aim of this effectiveness study was to ascertain whether residential treatment results in the intended partial clinical improvements among adults and adolescents, potentially facilitating subsequent treatment in less intensive settings. The second aim was to understand whether initial pathology plays a role in improvement and how early change in such factors relates to outcomes. There were the anticipated benefits of this treatment approach (a BMI increase of 2.5-3 points and a large BMI centile change for the adolescents; large reductions in EDE-Q scores). These findings are compatible with the existing literature on clinical outcomes during residential treatment, as outlined in the Introduction. The initial period of treatment was associated with particularly substantial levels of progress. However, that early change was not associated with later levels of benefit. Similarly, initial pathology played a very limited role in predicting outcome, with the most consistent finding being that starting treatment at a lower BMI was associated with a greater increase in BMI by the end of treatment (as also found by Raykos et al., 2018).

This finding supports the use of residential treatment programmes for the early part of treatment of relatively severe, high-risk anorexia nervosa, whether for adults or adolescents. While the process of symptom interruption and the achievement of weight gain might explain a large part of any wider improvement, it is also possible that the nature of the programme matters too. Therefore, any such programme needs to demonstrate evidence of its effectiveness. The findings differ from those of the wider treatment literature for eating disorders (Vall & Wade, 2015) in one substantive way – early change did not result in greater later change. Otherwise, these findings are compatible with the wider literature, with the lack of pre-treatment predictors of weight gain and the larger levels of change in the early part of treatment being similar to the findings of other research (e.g., Raykos et al., 2013; Turner et al., 2015; Vall & Wade, 2015).

Obviously, these findings do not guarantee that such patients will reach full recovery, as that is dependent on multiple factors that are beyond the control of the residential unit itself (e.g., the patients' engagement with the relevant subsequent treatment; the availability of such treatment; the quality of such care). Transitional arrangements are clearly likely to be important in enhancing the potential for full recovery, determining continuity of care and the development of new goals (e.g., final weight gain; relapse prevention). They are also likely to differ between younger and older patients, as a return to full-time education or a move to College or University are more likely with the younger group. **8** However, this intensive initial approach has demonstrated gains in lines with goals of the NICE-recommended (2017) approach to the limited use of residential treatment.

The patients in this case series were treated using a single protocol for each age group (albeit adapted to individual needs). It is possible that such gains could be made with different treatment components (e.g., different psychological therapies) or with other forms of intensive intervention (e.g., day-patient care), though weight gain would need to remain the primary clinical outcome for adults and for adolescents (Bulik et al., 2007). Any such approach would meet the NICE recommendation (NICE, 2017) of initiating intensive treatment for anorexia nervosa only if it is necessary, and maintaining it only while it results in substantial change.

This study has a number of limitations. For example, while information about previous successful or unsuccessful treatment experiences was not available in this study, it would be important to consider those experiences in future studies, to determine which patients might benefit more from such intensive work. Similarly, it would have been useful if this study had systematically assessed comorbidity (e.g., anxiety, depression, personality pathology, trauma reactions) at assessment, in order to characterize the sample more clearly. Such information should be gathered routinely in future studies. A further issue is the cultural specificity of such findings, where the availability and length of intensive treatments varies widely. For example, in many countries, this long a period of residential treatment would not have been available to all or any patients, due to limited insurance and bed provision. However, it is positive to note that a very substantial amount of benefit was established in just six weeks, making it possible

to use residential provision to get substantial clinical gains even in a much shorter time. Obviously, the degree to which these smaller early changes prepare patients for subsequent treatment needs to be considered in research conducted in other cultures. However, the greater benefits of longer therapy for patients who start as a lower BMI do support the need to ensure that such patients are offered longer periods of intensive treatment. Finally, the attrition rate might have been influenced by a combination of factors, including the planned goals and the fact that the treatment funding was largely based on public insurance costs, meaning that patients could drop out of treatment without the fear of losing the access to funded treatment in future. Therefore, the attrition rate for different cultures needs to be explored in future work.

A key issue raised by this study is that the most substantial period of symptom change is in the first six sessions of treatment. This raises the clinical question of whether residential treatment should be extended beyond this period of rapid change, or whether the transition to less intensive care should take place much earlier than it did in this clinical sample. Different clinical cultures set this time period as longer than in this study (aiming for complete recovery or full weight regain while in residential care), while others have shorter residential periods (more in keeping with this six-week period. At present, there is no evidence to support setting a particular time frame, though the goal of shorter residential care is clearly one that has patient benefit at its heart, as well as minimizing financial costs (e.g., NICE, 2017). Over-extended periods in residential care risk the patient lacking intrapersonal coping skills for functioning in other settings, making relapse risk higher. However, excessively short periods carry the risk of the patient lacking many of the skills that they could be learning, with the same heightened risk of relapse. The optimum point for stepping down care is also likely to depend on patient characteristics. Therefore, it is important that future research should address the issue of what temporal, treatment and patient characteristics predict the optimum outcome from residential care, so that stepping down levels of care can be made as clinically effective as possible. However, the early change found in this study indicates that clinicians and researchers would be best advised to start with the assumption that any additional residential

stay beyond a relatively short period would need to be justified rather than assumed to be clinically useful. Such an assumption of brevity as the norm is in keeping with NICE's (2017) recommendations.

Further research is needed to address the questions raised here – are the same results found among patients who receive other intervention patterns, and are they maintained into progress through to later in treatment, resulting in recovery? Multiple therapeutic and service factors will need to be considered in order to determine what makes for an effective initial approach, what makes for an effective transitional arrangement, and what constitutes the optimum subsequent therapy, leading to recovery. It has been indicated in the Introduction that this literature lacks a consistent approach to clinical research, weakening the case for residential treatment, particularly in the absence of adequately controlled or followed-up studies (e.g., Hay et al., 2019; NICE, 2017). Such controlled trials are urgently needed, and there should be consideration of what constitutes the optimum duration of such intensive and costly interventions. It is also important to consider that the optimum final part of therapy might differ according to the nature of the more intensive first part. Finally, differences in gender, ethnicity and socio-economic background might be relevant, and should be considered in this field of treatment research.

Conflicts of interest

The authors have no conflict of interest to declare.

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Table 1

Group characteristics at the start of treatment

	Adults		Adolescents		*t*-test	
	M	*(SD)*	*M*	*(SD)*	*t*	*P*
Age (years)	27.2	(11.0)	14.9	(1.22)	8.94	.001
Length of admission (days)	139.3	(70.1)	119.7	(62.1)	1.49	.140
Body Mass Index	14.7	(1.82)	15.0	(1.74)	1.08	.281
EDEQ Global	4.37	(1.31)	4.07	(1.49)	1.03	.305
EDEQ Restraint	4.33	(1.71)	3.76	(1.69)	1.64	.104
EDEQ Eating Concerns	3.84	(1.41)	3.51	(1.40)	1.14	.258
EDEQ Weight Concerns	4.44	(1.50)	4.04	(1.68)	1.23	.223
EDEQ Shape Concerns	4.88	(1.31)	4.97	(2.51)	0.22	.825

Table 2

Improvements in eating pathology over course of residential treatment (completer analysis)

		Start of treatment (SoT)		Week 6 of treatment (Wk6)		End of treatment (EoT)		ANOVA			
Group	**Measure**	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*F*	*P*	Partial *eta*^{2}	Post hoc tests (*P* < .05)
Adolescents	BMI	15.0	(1.61)	16.7	(1.54)	18.1	(1.66)	57.8	.001	.738	SoT < Wk6 < EoT
	EDEQ Global	3.74	(1.46)	2.76	(1.52)	1.55	(1.56)	26.3	.001	.556	SoT > Wk6 > EoT
	EDEQ Restraint	3.36	(1.89)	1.45	(1.55)	0.96	(1.44)	27.7	.001	.569	SoT > Wk6 > EoT
	EDEQ Eating Concerns	3.36	(1.33)	2.43	(1.57)	1.16	(1.29)	25.1	.001	.556	SoT > Wk6 > EoT
	EDEQ Weight Concerns	3.71	(1.77)	3.16	(1.84)	1.57	(1.69)	16.1	.001	.447	SoT > Wk6 > EoT
	EDEQ Shape Concerns	4.38	(1.47)	3.91	(1.65)	2.23	(2.00)	16.8	.001	.444	SoT = Wk6 > EoT
Adults	BMI	14.6	(1.83)	16.1	(1.75)	17.5	(1.76)	41.2	.001	.548	SoT < Wk6 < EoT
	EDEQ Global	4.16	(1.38)	3.45	(1.47)	2.29	(1.62)	27.0	.001	.574	SoT > Wk6 > EoT
	EDEQ Restraint	3.96	(1.79)	2.17	(1.61)	1.76	(1.54)	20.0	.001	.526	SoT > Wk6 = EoT
	EDEQ Eating Concerns	3.55	(1.39)	2.92	(1.38)	1.93	(1.57)	21.7	.001	.520	SoT > Wk6 > EoT
	EDEQ Weight Concerns	4.40	(1.32)	3.89	(1.72)	2.42	(1.97)	19.8	.001	.497	SoT = Wk6 > EoT
	EDEQ Shape Concerns	4.68	(1.49)	4.74	(1.68)	3.11	(1.89)	15.0	.001	.429	SoT = Wk6 > EoT

Table 3

Improvements in eating pathology over course of residential treatment (intention-to-treat analysis)

		Start of treatment (SoT)		Week 6 of treatment (Wk6)		End of treatment (EoT)		ANOVA			
Group	**Measure**	*M*	*(SD)*	*M*	*(SD)*	*M*	*(SD)*	*F*	*P*	Partial *eta*^{2}	Post hoc tests (*P* < .05)
Adolescents	BMI	15.1	(1.74)	16.6	(1.70)	17.5	(1.94)	54.0	.001	.639	SoT < Wk6 < EoT
(*N* = 54)	EDEQ Global	4.01	(1.40)	3.16	(1.72)	2.51	(1.95)	20.0	.001	.445	SoT > Wk6 > EoT
	EDEQ Restraint	3.76	(1.69)	2.30	(1.93)	1.94	(1.99)	21.9	.001	.467	SoT > Wk6 > EoT
	EDEQ Eating Concerns	3.51	(1.40)	2.73	(1.67)	2.07	(1.81)	20.9	.001	.465	SoT > Wk6 > EoT
	EDEQ Weight Concerns	4.04	(1.68)	3.54	(2.02)	2.75	(2.23)	11.4	.001	.313	SoT > Wk6 > EoT
	EDEQ Shape Concerns	4.72	(1.57)	4.11	(1.85)	3.28	(2.22)	12.0	.001	.325	SoT = Wk6 > EoT
Adults	BMI	14.7	(1.82)	15.9	(1.68)	16.9	(1.90)	40.6	.001	.623	SoT < Wk6 < EoT
(*N* = 44)	EDEQ Global	4.37	(1.31)	3.78	(1.46)	3.02	(1.85)	25.1	.001	.539	SoT > Wk6 > EoT
	EDEQ Restraint	4.33	(1.71)	3.01	(1.98)	2.50	(1.96)	26.9	.001	.562	SoT > Wk6 > EoT
	EDEQ Eating Concerns	3.84	(1.41)	3.23	(1.42)	2.46	(1.68)	26.4	.001	.551	SoT > Wk6 > EoT
	EDEQ Weight Concerns	4.43	(1.50)	4.07	(1.71)	3.19	(2.13)	15.1	.001	.412	SoT = Wk6 > EoT
	EDEQ Shape Concerns	4.88	(1.31)	4.84	(1.47)	3.86	(1.97)	12.4	.001	.367	SoT = Wk6 > EoT

Table 4

Association of early eating characteristics with level of change in eating pathology from baseline to discharge

	Adults		**Adolescents**	
Initial scores	Change in BMI	Change in EDE-Q Global	Change in BMI	Change in EDE-Q Global
BMI	-.545**	.090	-.441**	-.004
EDE-Q Global	-.110	-.044	-.007	.222
EDE-Q Restraint	-.095	.040	.066	.222
EDEQ Eating concerns	-.006	-.096	-.167	.158
EDE-Q Weight concerns	-.202	-.010	-.060	.132
EDE-Q Shape concerns	-.126	-.096	-.051	.277

* $P < .05$; ** $P < .001$