**Supplementary Results**

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# Supplementary Results relating to Planned Comparisons

## **Supplementary Table 1.** Results from analyses comparing completers vs non-completers.

| **Variable** | **p-value** | **Statistic** | **Test** |
| --- | --- | --- | --- |
| Age | 0.97 | 2020.00 | Mann-Whitney u-test |
| Gender  | 0.64 | 0.89 | chi-squared |
| Ethnicity  | **0.04** | **4.35** | **chi-squared** |
| Marital status  | 1.00 | 0.00 | chi-squared |
| Diagnosis  | 0.59 | 1.05 | chi-squared |
| BMI  | 0.23 | 1253.00 | Mann-Whitney u-test |
| BMI categories  | 0.06 | 7.53 | chi-squared |
| Previous specialist ED treatment  | 0.78 | 0.08 | chi-squared |
| Comorbidities  | 0.62 | 0.24 | chi-squared |
| Prescribed medication  | 0.23 | 1.42 | chi-squared |
| Time on waitlist  | **0.02** | **943.00** | **Mann-Whitney u-test** |
| Binge eating  | 0.55 | 267.50 | Mann-Whitney u-test |
| Vomiting  | 0.98 | -0.03 | t-test |
| Laxative use  | 0.31 | 1.07 | t-test |
| Restriction  | 0.36 | 1089.00 | Mann-Whitney u-test |
| Exercise  | 0.42 | 851.00 | Mann-Whitney u-test |
| Weight and Shape Concern  | 0.45 | 817.50 | Mann-Whitney u-test |
| Eating Concern  | 0.32 | 705.50 | Mann-Whitney u-test |
| Overall Attitudinal  | 0.75 | 717.00 | Mann-Whitney u-test |

This table displays the results from the statistical tests comparing differences between completers and non-completers, and specifies which test was used. *Abbreviations:* BMI = body mass index; ED = eating disorder

## **Supplementary Table 2.** Results from ED-15 change score analyses.

| **Variable** | **p-value** | **Statistic** | **Test** |
| --- | --- | --- | --- |
| Binge eating | <0.001 | 7.48 | paired t-test |
| Vomiting | 0.048 | 34.50 | Wilcoxon |
| Laxative use | 0.37 | 0.00 | Wilcoxon |
| Restriction | <0.001 | 10.00 | Wilcoxon |
| Exercise | 0.02 | 21.50 | Wilcoxon |
| Weight and Shape Concern | <0.001 | 8.28 | paired t-test |
| Eating Concern | <0.001 | 11.30 | paired t-test |
| Overall Attitudinal | <0.001 | 10.41 | paired t-test |

This table displays the results from the statistical tests analysing the change in ED-15 scores from pre- to post-treatment, and specifies which test was used.

# Post-Hoc Analyses

## ***Exploring Reasons for declining or discontinuing virtual GSH***

To better understand reasons for declining GSH or dropping out of treatment, we conducted a summative content analysis (Hsieh & Shannon, 2005) of the medical records for all patients (*n =* 34) who declined or dropped out of GSH after being allocated to a coach. Since patients from minoritised ethnic backgrounds were over-represented in the non-completer group, we also looked at reasons for drop-out reported by patients from white vs minoritised ethnic backgrounds. Four of the authors (MRD, CHH, EBO, and CK) reviewed the medical records and summarised the main reason for drop-out. A coding framework was inductively developed to categorise the reason for drop-out and applied independently by each reviewer. Disagreements were resolved through discussion. Frequencies for each code were calculated to represent the total number of patients that endorsed each reason for drop-out. The results of this review are displayed in Supplementary Table 3. Most who declined GSH prior Session 0 were unable to make the required time commitment (*n =* 3) and the most common reason for dropping out after Session 0 (*n =* 6) or during treatment (*n =* 24) was pursuit of another treatment, such as other primary mental health care (e.g., IAPT) or private therapy. Notably, all patients who reported prioritising weight loss as a reason for drop-out (at any stage, *n =* 5) self-identified as Black or Black British. One of these patients also reported that a worsening of symptoms and prior negative experiences with the NHS contributed to their decision to leave treatment.

### **Supplementary Table 3.** Results from the review of patient medical records demonstrating the reasons behind discontinuing or dropping out from GSH.

|  |  |  |
| --- | --- | --- |
| **GSH stage** | **Reason for discontinuing** | ***n*** |
| **Before session 0** | **Total number of patients** | ***n =* 4** |
| Other commitments/not enough time to engage | *n =* 3 |
| Prioritise weight loss | *n =* 1 |
| **Before starting treatment** | **Total number of patients** | ***n =* 6** |
| Pursue other treatment | *n =* 3 |
| Patient felt that ED therapy was no longer needed | *n =* 1 |
| Lost contact | *n =* 2 |
| **During treatment** | **Total number of patients** | ***n =* 24** |
| Other commitments/not enough time to engage | *n =* 5 |
| Prioritise weight loss | *n =* 4 |
| Referred to or pursued other treatment | *n =* 6 |
| Mutual agreement that ED therapy was no longer needed | *n =* 1 |
| Lost contact | *n =* 4 |
| Difficulty with GSH | *n =* 3 |
| Dissatisfied with GSH | *n =* 1 |
| **Patients from a white background** | **Total number of patients** | ***n =* 21** |
| Other commitments/not enough time to engage | *n =* 5 |
| Prioritise weight loss | *n =* 0 |
| Referred to or pursued other treatment | *n =* 6 |
| ED therapy no longer needed | *n =* 2 |
| Lost contact (stopped responding) | *n =* 5 |
| Difficulty with GSH | *n =* 2 |
| Dissatisfied with GSH | *n =* 1 |
| **Patients from a minoritised ethnic background** | **Total number of patients** | ***n =* 13** |
| Other commitments/not enough time to engage | *n =* 3 |
| Prioritise weight loss | *n =* 5 |
| Referred to or pursued other treatment | *n =* 3 |
| Lost Contact | *n =* 1 |
| Difficulty with GSH | *n =* 1 |

As indicated in Figure 1, 52 patients did not complete treatment for the following reasons: no response to GSH invitation (*n =* 11), stepped up for alternate ED care (*n =* 6), mutual agreement for early end (*n =* 1). Table 4 displays the reason reported by the patients who declined or dropped out of GSH at some point between coach allocation and end of treatment (*n =* 34). The results are broken down 1) by each stage of treatment and 2) by ethnic backgrounds at any stage of treatment. The total number of patients from each category is displayed in the top row of each box (“Total patients”), with the number of patients who endorsed each reason displayed underneath. Where patients cited multiple reasons for declining or discontinuing treatment, a “main” reason was ascertained by consensus.

*Abbreviations: n =* number of patients

## ***Exploring whether differences in pre-treatment characteristics may have contributed to higher rates for non-completion in patients form minoritised ethnic groups (versus white).***

Higher rates for non-completion for patients from minoritised ethnic groups could indicate poorer GSH acceptability in this population. To explore factors that may have contributed to non-completion, we assessed differences between white and minoritised ethnic groups for demographic and pre-treatment clinical characteristics. Pre-treatment patient demographics and clinical characteristics by ethnicity are presented in Supplementary Table 4 and full results from tests for between-group differences are presented in Supplementary Table 5.

A significant difference between groups was observed for categorical BMI (p < 0.05), with patients from a minoritised ethnic background being significantly more likely to be categorised as overweight or obese than patients from a white background. Diagnosis of OSFED was also over-represented in patients from a minoritised ethnic background (18%) compared to white patients (5%), however, this difference was not significant (p = 0.08).

### **Supplementary Table 4.** Pre-treatment patient demographics and clinical characteristics by ethnicity.

|  |  |  |
| --- | --- | --- |
| **Variable** | **White** | **Minoritised ethnic group** |
| Ethnicity  | n = 80 | n = 33 |
| White | 100% (80) | -- |
| Black or Black British | -- | 48.5% (16) |
| Asian or Asian British | -- | 18.2% (6) |
| Mixed or multiple ethnic groups | -- | 21.2% (7) |
| Other ethnic group | -- | 12.1% (4) |
| Age [years] | n = 80 | n = 33 |
| 33.99 ± 10.39 | 32.82 ± 11.17 |
| Gender  | n = 80 | n = 33 |
| Female | 87.5% (70) | 78.8% (26) |
| Male | 12.5% (10) | 18.2% (6) |
| Other | -- | 3.0% (1) |
| Diagnosis  | n = 80 | n = 33 |
| Bulimia nervosa | 42.5% (34) | 36.4% (12) |
| Binge eating disorder | 52.5% (42) | 45.5% (15) |
| Other specified feeding and eating disorder | 5.0% (4) | 18.2% (6) |
| BMI  | n = 65 | n = 30 |
| 32.73 ± 11.16 | 35.81 ± 9.32 |
| BMI categories  | n = 65\* | n = 30\* |
| Underweight (<=18.5 kg/m2) | -- | 3.3% (1) |
| Normal weight (18.5 kg/m2 -24.9 kg/m2) | 33.8% (22) | 6.7% (2) |
| Overweight (25 kg/m2 -29.9 kg/m2) | 12.3% (8) | 20% (6) |
| Obese (>=30 kg/m2) | 53.8% (35) | 70% (21) |
| Previous specialist ED treatment  | n = 56 | n = 26 |
| Yes | 21.4% (12) | 15.4% (4) |
| No | 78.6% (44) | 84.6% (22) |
| Comorbidities  | n = 79 | n = 33 |
| None listed | 34.2% (27) | 42.4% (14) |
| Depression | 43.0% (34) | 33.3% (11) |
| Anxiety | 21.5% (17) | 15.2% (5) |
| Other mental health disorder | 11.4% (9) | 12.1% (4) |
| Neurodevelopmental disorder | 3.8% (3) | 6.1% (2) |
| Type 2 Diabetes | 6.4% (5) | 6.1% (2) |
| Other physical health condition | 10.3% (8) | 15.2% (5) |
| Prescribed medication  | n = 79 | n = 33 |
| None listed | 64.6% (51) | 72.7% (24) |
| Antidepressants | 27.8% (22) | 18.2% (6) |
| Other psychotropic medication | 6.3% (5) | 3.0% (1) |
| Other medication for physical health | 13.9% (11) | 9.1% (3) |
| Time on waitlist [weeks] | n = 69 | n = 31 |
|  | 29.16 ± 21.41 | 27.66 ± 14.28 |
| Binge eating  | n = 64 | n = 30 |
| 3.30 ± 2.72 | 3.02 ± 2.47 |
| Vomit | n = 65 | n = 28 |
| 0.80 ± 1.95 | 0.50 ± 1.23 |
| Laxative use  | n = 63 | n = 27 |
| 0.05 ± 0.28 | 0.59 ± 1.72 |
| Restriction  | n = 59 | n = 25 |
| 2.12 ± 2.7 | 1.56 ± 1.87 |
| Exercise  | n = 60 | n = 24 |
| 0.62 ± 1.43 | 1.12 ± 2.23 |
| Weight and Shape Concern  | n = 46 | n = 19 |
| 3.97 ± 1.46 | 4.42 ± 1.18 |
| Eating Concern  | n = 46 | n = 19 |
| 3.85 ± 1.04 | 3.70 ± 1.08 |
| Overall Attitudinal  | n = 45 | n = 19 |
| 3.97 ± 0.96 | 4.13 ± 0.89 |

This table describes the demographic and clinical characteristics (% and n or mean and SD) prior to treatment by ethnic group (white or minoritised ethnic group). The minoritised ethnic groups were collapsed into a single category due to small sample size in each individual group. The descriptives were calculated for participants with available data for each characteristic, indicated in each row by “n =”, rather than the full group. Chi-squared tests, t-tests, and Mann-Whitney tests were used to compare statistical differences; the results of these statistical tests are displayed in Supplementary Table 5. \*p < 0.05.

*Abbreviations:* SD = standard deviation; BMI = body mass index; kg = kilograms; m = metres; n = number of patients with available data; ED = eating disorder

### **Supplementary Table 5.** Results from analyses comparing white vs minoritised ethnic groups for pre-treatment demographic and clinical characteristics.

| **Variable** | **p-value** | **statistic** | **test** |
| --- | --- | --- | --- |
| Age | 0.42 | 1448.00 | Mann-Whitney u-test |
| Gender  | 0.21 | 3.17 | chi-squared |
| Marital status  | 0.58 | 0.31 | chi-squared |
| Diagnosis  | 0.08 | 5.03 | chi-squared |
| BMI  | 0.10 | 770.00 | Mann-Whitney u-test |
| BMI categories  | **0.02** | **9.90** | **chi-squared** |
| Previous specialist ED treatment  | 0.73 | 0.12 | chi-squared |
| Comorbidities  | 0.54 | 0.37 | chi-squared |
| Prescribed medication  | 0.54 | 0.38 | chi-squared |
| Number of sessions | 0.08 | 1560.50 | Mann-Whitney u-test |
| Time on waitlist  | 0.98 | 1073.00 | Mann-Whitney u-test |
| Binge eating  | 0.28 | 361.00 | Mann-Whitney u-test |
| Vomiting  | 0.62 | -0.50 | t-test |
| Laxative use  | 0.50 | 0.68 | t-test |
| Restriction  | 0.69 | 1009.50 | Mann-Whitney u-test |
| Exercise  | 0.58 | 958.50 | Mann-Whitney u-test |
| Weight and Shape Concern  | 0.12 | 780.00 | Mann-Whitney u-test |
| Eating Concern  | 0.62 | 786.00 | Mann-Whitney u-test |
| Overall Attitudinal  | 0.58 | 679.00 | Mann-Whitney u-test |

This table displays the results from the statistical tests comparing differences between patients from white and minoritised ethnic backgrounds, and specifies which test was used.

*Abbreviations:* BMI = body mass index; ED = eating disorder.

## ***Exploring whether treatment effectiveness varies according to diagnosis.***

We wanted to explore whether treatment effectiveness might vary between diagnoses, as this could potentially inform treatment allocation. We therefore conducted a post-hoc comparison of change in ED behaviours and symptom scores between BN and BED. OSFED was not included due to the small sample size (*n =* 12). Results are reported for all ED cognitions and behaviours, including purging and compensatory behaviours; however, we note that these behaviours are a central feature of BN only, despite being reported by some patients with BED. Analyses found a reduction in the frequency of behaviours and symptom severity following treatment for both disorders. For all symptoms and behaviours (excluding binge eating, vomiting and laxative use), larger effect sizes for change scores were reported in BED than in BN, but differences between groups were not significant. Full Results are displayed in Supplementary Tables 6 and 7.

### **Supplementary Table 6. Results from analyses comparing pre- to post-treatment change scores between patients with bulimia nervosa and binge eating disorder.**

| **Variable** | **p-value** | **Statistic** | **Test** |
| --- | --- | --- | --- |
| Binge eating | 1.00 | 526.00 | Mann-Whitney u-test |
| Vomiting | 0.01 | 380.00 | Mann-Whitney u-test |
| Laxative use | 0.09 | 1051.50 | Mann-Whitney u-test |
| Restriction | 0.21 | 396.50 | Mann-Whitney u-test |
| Exercise | 0.71 | 299.00 | Mann-Whitney u-test |
| Weight and Shape Concern | 0.20 | 242.50 | Mann-Whitney u-test |
| Eating Concern | 0.42 | 0.82 | t-test |
| Overall Attitudinal | 0.18 | 1.39 | t-test |

This table displays the results from the statistical tests comparing differences in change scores between patients with bulimia nervosa and binge eating disorder, and specifies which test was used.

### **Supplementary Table 7.** ED-15 pre- and post-treatment scores, with change scores and effect sizes for patients with bulimia nervosa and binge eating disorder.

|  |  |  |
| --- | --- | --- |
|  | **Bulimia nervosa** | **Binge eating disorder** |
| ***n*** | **Pre-treatment** | **Post-treatment** | **Change score** | **Effect size** | ***n*** | **Pre-treatment** | **Post-treatment** | **Change score** | **Effect size** |
| Binge eating | 27 | 3.19 ± 3.04 | 0.96 ± 1.74 | -2.22 ± 2.39 | -0.93 | 39 | 3.79 ± 2.09 | 1.64 ± 1.87 | -2.15 ± 2.44 | -0.88 |
| Vomiting | 27 | 1.74 ± 2.51 | 0.70 ± 2.32 | -1.04 ± 2.52\* | -0.41 | 40 | 0.03 ± 0.16 | 0.10 ± 0.63 | 0.07 ± 0.66\* | 0.11 |
| Laxative use | 24 | 0.25 ± 1.22 | 0.00 ± 0.00 | -0.25 ± 1.22 | -0.2 | 36 | 0.14 ± 0.83 | 0.06 ± 0.33 | -0.08 ± 0.50 | -0.17 |
| Restriction | 23 | 1.74 ± 2.72 | 0.61 ± 1.59 | -1.13 ± 2.07 | -0.55 | 29 | 2.34 ± 2.36 | 0.43 ± 0.96 | -1.91 ± 2.49 | -0.77 |
| Exercise | 21 | 1.19 ± 2.29 | 0.52 ± 1.66 | -0.67 ± 2.39 | -0.55 | 30 | 0.63 ± 1.38 | 0.13 ± 0.51 | -0.50 ± 1.53 | -0.77 |
| Weight and Shape Concern | 17 | 3.79 ± 1.53 | 2.54 ± 1.72 | -1.25 ± 1.58 | -0.8 | 23 | 4.23 ± 1.23 | 2.25 ± 1.28 | -1.98 ± 1.42 | -1.39 |
| Eating Concern | 17 | 4.04 ± 0.96 | 2.37 ± 1.22 | -1.68 ± 1.32 | -1.27 | 23 | 4.01 ± 1.05 | 2.01 ± 1.07 | -2.00 ± 1.11 | -1.81 |
| Overall Attitudinal | 17 | 3.89 ± 1.01 | 2.47 ± 1.31 | -1.42 ± 1.36 | -1.05 | 23 | 4.14 ± 0.94 | 2.16 ± 1.14 | -1.99 ± 1.14 | -1.75 |

Only patients with data for each item at pre-treatment and post-treatment are included in this table; the sample size is included in column ‘*n*’. In the absence of a completed ED-15 questionnaire, the frequencies of eating disorder behaviours were added from medical record notes where available. A change score prefixed with a minus sign indicates a reduction in ED-15 score from pre-treatment to post-treatment. Frequencies of binge eating and vomiting were reported as the number of *times* this occurred in the previous week. Laxative use, restriction, and exercise were reported as the number of *days* this occurred in previous week. Chi-squared tests, t-tests, and Mann-Whitney tests were used to compare statistical differences between completers and non-completers. The full results of these analyses can be found in Supplementary Table 7.

*Abbreviations:* n = number of patients with available data; SD = standard deviation

# Supplementary References

Hsieh, H.-F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, *15*(9), 1277-1288. <https://doi.org/10.1177/1049732305276687>