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Assessing the impact of attending

a day treatment programme for Eating Disorders on patient health

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Abstract

A repeated measures cohort study was conducted to investigate the impact of attending a day treatment programme on physical and psychological state, and to assess which baseline factors predicted level of recovery. Physical and psychological outcomes of treatment were analysed for 116 patients admitted to the treatment programme between 1996 and 2006 and were found to be in line with previous day care evaluations, with the majority of patients showing improvements on all measures. A multiple regression analysis revealed several factors to be predictive of treatment outcomes including patient demographics, co-morbidities and traumatic life events. In particular, those patients who benefited most from the treatment had a lower BMI at admission, stayed longer at the unit, were older, less likely to have other physical and psychiatric co-morbidities, particularly OCD or a history of sexual abuse and whose most predominant eating disorder problem was characterised by low weight.

Key words: eating disorders, day care, recovery, predictors.

Introduction

There are a number of different types of treatments offered to people with eating disorders ranging from inpatient units for the most severe, to intensive outpatient treatment in the form of day treatment / partial hospitalisation, to outpatient groups for patients able to function in the community. The present study focussed on day care treatment.

In a review of day programmes in England and Germany, Zipfel et al (2002) reported that many day programmes share a common multidisciplinary approach utilising group treatments with a focus on promoting autonomy and independence. However they also found variability in the intensity of care and criteria used for inclusion in the treatment and argued that outcomes for specific programmes should be scrutinised in order to draw useful conclusions regarding recovery rates. Several researchers have aimed to address this. For example, Gerlinghoff, Backmund and Franzen (1998) evaluated the TCE day programme in Munich, which reported significant weight gain in anorectic patients, significant reductions in binge eating in bulimic patients and significant improvements in all 106 patients studied on psychological, sexual and socioeconomic measures. Furthermore, Robinson (2003) reported that, in preliminary analysis of the first 81 patients to attend the Royal Free day hospital in the UK, patients showed significant improvements in relation to eating disorder symptoms, depression and BMI with 62% patients reaching a BMI of 17.5 or above. Similarly, in an evaluation of a day unit in Oxford, Peake, Limbert and Whitehead (2005) reported significant improvements in eating disordered behaviours, BMI, and psychological measures including the Beck's depression and anxiety inventories. However, missing data and incomplete treatments signal a need for these promising results to be interpreted with care. Outcome data was only available for 65 out 106 patients and only 63.6% completed treatment at the Oxford service making the findings much less

representative and raising the question as to whether the patients who were missing from the analysis were those with poorer outcomes.

These studies therefore indicate the potential for day treatments to aid physical and mental health recovery in patients with eating disorders. However, as not all patients show the same pattern of recovery it is also important to consider the factors which may predict the outcome of these treatments as a means to tailor interventions to individual patients and to maximise their effects. Much of the previous research into predictors of outcomes in eating disorders focus on how baseline demographics factors, co-morbidities, behaviours, and life events can predict both drop out from treatment and eating disorder status at follow up after completion of treatment.

Within the literature, it is often argued that a longer duration of disorder is predictive of a negative outcome due to the abnormal eating behaviours and attitudes becoming more entrenched and therefore more difficult to treat as time progresses. This has been supported by research conducted by Fichter, Quadflieg and Hellund (2006) who found that a poorer outcome 12 years following treatment was significantly predicted by longer duration of illness, as well as research by Kahn and Pike (2001) which found this also predicted drop out from treatment which is in turn strongly associated with poorer prognosis. Linked to this, the age the patient is at the onset of the eating disorder is also sometimes considered to be influential in prediction of outcome for similar reasons. For example Castro, Gila, Puig, Rodriguez and Toro (2004) found that lower age at onset was predictive of patients needing to be readmitted to inpatient care within 12 months of completing initial treatment. However, despite these findings suggesting that these demographic factors may be significant predictors, there have also been several studies which have found these factors to be of little or no predictive value for long term follow up (Saccomani, Savoini, Cirrincione,

Vercellio and Ravera, 1998; Strober, Freeman and Morrell, 1997) or necessary readmission following treatment (Castro et al, 2004).

As previously addressed, psychological co-morbidities are very common within eating disorders patients and there has been much research investigating how their presence may be predictive of outcome. Fichter and Quadflieg (1999) found that the presence of a co-morbid psychiatric illness was predictive of an unfavourable eating disorder outcome at 2 and 6 year follow up after initial treatment. More specifically Saccomani et al (1998) found that co-morbid mood or personality disorders were predictors of negative prognosis at long term follow up. Similarly, a review of longitudinal studies and random controlled trials by Crane, Roberts and Treasure (2007) found that in the majority of cases, co-morbid anxiety disorders, specifically obsessive compulsive traits, were predictors of negative outcome in eating disorders, possibly suggesting that co-morbidities may interfere with the process of recovery in eating disorders patients. However, there is evidence to suggest that although patients with psychiatric co-morbidities may have more severe eating and general psychopathology than those without, their potential for positive outcomes and rate of progress towards recovery is comparable (Cumella, Kally and Wall, 2007; Wonderlich, Fullerton, Swift and Klein, 1994).

Stressful life events, for example sexual abuse or parental separation, are often cited as possible triggers for eating disordered pathology. However it is also possible that a history of adverse life experiences may be a predictive factor in the outcome of eating disordered patients. In a study by Sohlberg, Norring and Rosmark (1992) which investigated outcome at one, two and three years following treatment, it was found that patients who had experienced stressful life events had significantly worse outcomes than those who did not. Similarly, research by Tozzi, Sullivan, Fear,

McKenzie and Bulik (2003) which considered patient perspectives on recovery as well as clinical measures found that negative outcome was predicted by a reported history of sexual abuse. Although it appears therefore, that stressful life events may have predictive value in eating disorder outcomes, it is difficult to determine whether the experiences actually have a detrimental effect on recovery processes or rather contribute to a greater initial severity of illness.

Research therefore indicates that day care programmes can be effective in treating eating disorders. Research also highlights a number of variables which may be predictive of this success. In line with this, the present study aimed to examine the impact of attending a day treatment programme on a number of physical and psychological outcomes. The study also aimed to explore the role of patient's baseline demographics, life events and physical and psychological co-morbidities in predicting changes in these outcome variables following treatment.

Method

Sample

All patients (n = 116) admitted to the Lansdown Eating Disorders Unit day treatment programme within a 10 year period between the establishment of the programme in November 1996 and November 2006 were included in the study. The project was approved by the Local Research Ethics Committee.

Design

The study used a repeated measures cohort design.

Setting

The Lansdown Unit, based in Farnham Hospital and Centre for Health in Surrey provides partial hospitalisation/day care and outpatient treatment for patients with eating disorders including Anorexia Nervosa and Bulimia Nervosa. Patients within the day care programme attend the unit on 4 days per week between 9am and 2pm where they are supervised for breakfast and a hot lunch and also given the responsibility to prepare two additional snacks throughout the day. The patients in day care treatment are also expected to attend various group sessions including psychotherapy and groups with a cognitive behavioural focus addressing body image and psycho-education factors in relation to eating disorders. Day patients also receive individual health monitoring, nutritional advice and psychotherapy in parallel to the services offered to outpatients.

Day patients are not required to attend the programme at weekends, or on Wednesdays as these are reserved for assessments of new patients, staff meetings and monthly progress reviews for current patients, and therefore patients are expected to take full responsibility over the control of their food intake and eating behaviours on these days. Day care treatment in the service is offered for patients whose condition is severe but whose health is adequately stable to not warrant admission to a traditional inpatient hospital environment. Day treatment may be chosen as an alternative to inpatient treatment in the case where the patient is failing to make progress or continuing to deteriorate despite outpatient treatment, or may be used as a stepping stone for patients recently discharged from inpatient care in order ease the transition from the intense structured treatment offered as an inpatient to an independent life following recovery.

The criteria for admission to the day care programme is therefore not based specifically on patient variables, such as BMI but rather on the clinician's assessment

of the patient's individual suitability for the programme. Similarly, the length of time that a patient will continue to attend day care treatment is not a fixed number of days or weeks, instead it is continuously tailored to each patient as a result of regular reviews of their progress, which may result in discharge to outpatient care in successful cases or discharge following referral to an inpatient eating disorders service or acute psychiatric ward in the case of physical or psychological deterioration. Patients are most commonly referred to the Lansdown unit for specialist eating disorders treatment by their GP or another medical or psychiatric service which has contact with the patient.

Measures

Assessment consisted of self report measures, those taken from patient notes and ratings made by clinical staff. Measures were taken at baseline and when the patient left the unit to assess outcome.

Self report measures

The following self report questionnaires were completed by participants at baseline and also following treatment.

1. The Beck's Depression Inventory (BDI, Beck 1961): This is a 21 item self report questionnaire assessing the level of depression in the patient with each item relating to a specific symptom or attitude associated with the state of depression.

2. The Beck's Anxiety Inventory (BAI; Beck et al, 1988): This is also a 21 item self report questionnaire assessing the level of anxiety in the patient, again with each item relating to a specific symptom or attitude associated with the overall state of anxiety.

3. The Stirling Eating Disorders Scale (SEDS; Williams et al, 1994): For the purpose of this study 4 of the 8 subscales in this 80 item questionnaire were included: anorexic dietary cognitions (ADC), anorexic dietary behaviour (ADB), bulimic dietary cognitions (BDC) and bulimic dietary behaviours (BDB).

Higher scores on these measures indicate higher levels of depression, anxiety and anorexic and bulimic cognitions and behaviours.

Data from patient files

Each patient's notes were scrutinised and data relating to the following was recorded:

1. Demographics: Age at baseline, ethnicity, living circumstances, education type, age of eating disorder onset, duration of illness and length of stay during treatment.
2. Life events: Information relating to reported life events prior to admission was coded as history of sexual abuse, death of someone close to the patient, own divorce / relationship break up or difficulties, parental separation and reported physical abuse.
3. Psychological co morbidity: Information relating to psychological co-morbidity was coded as the presence of drug abuse, self harm, alcohol abuse and obsessive compulsive disorder/obsessive compulsive behaviours (OCD).
4. Physical co morbidity: Information relating to physical co-morbidity was coded as the presence of osteoporosis/osteopenia, Irritable Bowel Syndrome (IBS, including any bowel or digestive disorders) and reproductive problems (including ovarian cysts and infertility).

Outcome variables

The following outcomes variables were used to assess the impact of attending the Lansdown unit on physical and psychological state. All change scores were computed Time 1-Time 2. These were then classified as improvement, no change or got worse

for descriptive purposes. There was no attrition as all patients have data collected as they leave the clinic.

1. BMI: This was recorded at baseline and follow up and a change score was computed to create a measure of physical outcome.
2. Self report measures: Scores from these questionnaires were recorded as baseline and follow up and change scores were computed to create a measure of psychological outcome (depression, anxiety, anorexic and bulimic behaviour and cognitions).
3. Clinician rated improvement: Following discharge from the day care programme clinicians categorised the patients' outcomes as follows: Much Improvement / Some Improvement / No Change / Worse / Much Worse.

Results

The results were analysed in the following ways: i) to describe the participants' demographics, life events, physical and psychological co-morbidities and outcome variables using descriptive statistics ii) to assess the role of demographics, life events, physical and psychological co-morbidities in predicting outcomes using multiple regression analysis. Multiple regression analysis explores the extent to which a combination of variables can explain the variance in the outcome variable; it is a form of model building. As a rule there should be about 10-15 participants in the study for each variable entered. If this criteria is not met then variables need to be selected as all variables cannot be used. For the present study correlations were run between each variable and the patient outcomes. Those that were significant ($p < 0.01$) were then entered into the Multiple Regression analysis.

1. Describing subjects

i) Demographics

Participants' demographics and baseline behaviours are presented in table 1.

-insert table 1 about here -

All of the patients at the Lansdown unit were white, with an average age of 26 years.

The majority were being treated for Anorexia Nervosa, had been ill for an average of 8 and a half years and had attended the unit for an average of approximately 5 and a half months. Most of the patients were living with other people at the time of their admission with only a minority living alone. The majority of patients had attended a mixed state school with approximately a third of patients receiving their education in a private, same sex school. The most common baseline eating disordered behaviour was food restriction, with a third reporting bingeing, vomiting or laxative use and only a small minority using diuretics to control weight.

ii) Life events

Participants' significant life events are presented in table 2.

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The most commonly reported life event was parental separation which was reported by almost a half of all patients. A third reported physical abuse or sexual abuse and only a minority reported experiencing the death of someone close or their own divorce / separation. The results also showed that a large minority had experienced more than one life event as follows: 0 life events: n=21 (18.1%); 1 life event only: n=49 (42.2%); 2 life events: n=16 (13.8%); 3 life events: n=22 (19%); 4 life events: n=5 (2.6%).

iii) Baseline co-morbidities

Participants' co-morbidities at baseline are presented in table 3.

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In terms of physical co morbidity, the most common problems were bowel disorders including IBS and osteoporosis. In terms of psychological co morbidity nearly half of

the patients reported self harm and a third reported having OCD. Only a minority reported drug or alcohol problems. The mean baseline score on the Beck's Depression Inventory was within the threshold for 'severe depression' and the mean baseline score on the Beck's Anxiety Inventory indicates moderate anxiety.

iv) Outcomes

Participants' outcome measures at discharge are presented in table 4.

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The results showed that the majority of patients showed an improvement on all measures of psychological and physical outcomes. Improvement was particularly marked for depression, anorexic cognitions and behaviour and the total SEDS score. In the majority of measures, less than a third of patients showed signs of deterioration with only the exceptions of change in BMI and change in score on the Beck's Anxiety Inventory.

2. Predicting patient outcomes

Uni-variate correlations between demographics, life events, physical and psychological co-morbidities and outcomes were assessed to identify variables to be included in multiple regression analyses. A p value of 0.1 was selected as the cut off so as to not be overly restrictive. Where only one variable correlated uni-varietely, the Spearman's Rho correlation co-efficient is presented.

i) Change in BMI

The results showed that length of stay in the unit ($B=0.25$, $p=0.004$), a history of self harm ($B=-0.17$, $p=0.049$) and baseline BMI ($B=0.17$, $p=0.003$) significantly predicted change in BMI accounting for 18.2% of the variance. Duration of illness and history

of IBS were not predictive in the final model although they correlated univariately.

This indicates that an increase in BMI following treatment in the day treatment programme was predicted by a longer stay in treatment, an absence of self-harm and a lower BMI at admission.

ii) Change in depression (BDI)

The results showed that change in depression was predicted by a history of sexual abuse ($B=0.29$, $p=0.02$), OCD ($B=0.29$, $p=0.03$) and osteoporosis ($B=0.26$, $p=0.04$) predicting 20.2% of the variance. This indicates that a decrease in depression as measured by the BDI was significantly predicted by the absence of sexual abuse history, and the absence OCD and osteoporosis.

iii) Change in anxiety (BAI)

The results showed that change in anxiety was predicted by age at baseline ($B=-0.31$, $p=0.02$) accounting for 11.2% of the variance. Reproductive problems did not predict in the final model although it did correlate univariately. This indicates that a decrease in anxiety was predicted by being older at admission to the day care programme.

iv) Clinician rated improvement

The results showed that clinician rated improvement was predicted by a history of OCD ($B=0.19$, $p=0.04$) and length of stay in the unit ($B=-0.27$, $p=0.005$) accounting for 18% of the variance. A history of self harm, type of diagnosis, age at onset of problem and BMI at baseline were not predictive in the final model. This indicates that greater improvement was predicted by the absence of OCD and a longer stay in day care treatment.

v) Change in Anorexic dietary cognitions (ADC)

The results showed that a change in ADC was predicted by a history of sexual abuse ($B=0.37$, $p=0.009$), having been to a private school ($B=0.29$, $p=0.04$) and OCD ($B=0.26$, $p=0.048$) accounting for 18.3% of the variance. Age at onset did not predict in the final model. This indicates that a decrease in ADC was predicted by the absence of sexual abuse, not having been to a private school and not having a diagnosis of OCD.

vi) Change in Anorexia dietary behaviours (ADB)

The results showed that change in ADB was predicted by drinking alcohol to excess ($B=0.32$, $p=0.04$) and OCD ($B=0.45$, $p=0.0001$) accounting for 21.1% of the variance. This indicates that a decrease in ADB was predicted by the absence of OCD and alcohol abuse at baseline.

vii) Change in Bulimic dietary cognitions (BDC)

Only a history of sexual abuse correlated with change in BDC ($r=0.32$, $p=0.02$) indicating that a decrease in BDC was correlated with an absence of sexual abuse history at baseline.

viii) Change in Bulimic dietary behaviours (BDB)

Although several variables univariately correlated with change in BDB none of these remained significant in the final model.

ix) Change in SEDS

Only baseline OCD correlated with change in SEDS ($r=0.4$, $p=0.003$) indicating that a decrease in SEDS was correlated with an absence of OCD at baseline.

Discussion

The initial aim of the current study was to examine the impact of attendance at the Lansdown eating disorders day treatment programme on physical and psychological health. The results showed that BMI increased or remained stable in the majority of patients which is in line with the significant improvements in BMI reported in comparable investigations (Gerlinghoff et al, 1998; Robinson, 2003). Furthermore, in all psychological measures and associated subscales, the majority were found to improve between admission and discharge, with more than three quarters of patients making improvements on the BDI score, SEDS total score and the anorexic dietary cognitions subscale. This supports findings from the Oxford day care evaluation (Peake et al 2005) which reported significant improvements on all psychological measures. Furthermore, these positive findings were also reflected in the clinician rated improvement, with over half of patients being rated as making some or much improvement during treatment and less than a fifth being judged to have deteriorated.

The study also aimed to explore the role of a number of factors in predicting change in aspects of the patient's health. In terms of patient demographics a number of factors emerged. In particular, the results showed that older patients made greater psychological improvements in the form of change in BDI score, that having attended a private school predicted poorer psychological outcomes in the form of a lesser change on the anorexic dietary cognitions subscale of the SEDS and that a greater increase in BMI was predicted by a longer stay within treatment and a lower BMI at admission. Contrary to previous research, however, neither the length of time patients had been suffering with their eating disorders nor the age of onset predicted patient health outcomes (Fichter et al, 2006; Kahn and Pike, 2001; Castro et al 2004).

The results also showed a role for psychiatric co-morbidities in predicting both physical and psychological outcomes at discharge. In particular, the presence of OCD

at baseline was associated with a poorer outcome on several psychological measures, including BDI score, SEDS total score and scores on anorexic dietary cognitions and behaviours strongly supporting research by Crane et al (2007). Further, self harming behaviour at baseline was predictive of less improvement in BMI and past experience of sexual abuse was related to poorer outcomes in terms of BDI and anorexic and bulimic dietary cognitions which provides support for work by Tozzi et al (2003). Interestingly, osteoporosis was also found to be a predictor of less favourable outcomes in terms of BDI and low self esteem change.

Finally the study explored the role of eating disorder behaviours and only found a role for baseline binge eating which predicted poorer outcomes in terms of anorexic dietary cognitions and behaviours supporting previous work by Fichter and Quadflieg (1999). Other behaviours such as purging, self-induced vomiting and the misuse of laxatives and diuretics were not predictive of outcomes.

In summary, the results indicate that attendance at the day care programme was associated with improvements in patient health in terms of both psychological and physical outcomes. Some patients, however, benefit from this treatment approach more than others. In particular, the results indicate that those patients who show most improvement had stayed longer at the unit, were older, less likely to have other physical and psychiatric co-morbidities or a history of sexual abuse and whose predominant eating disorder problem was characterised by low weight. Thus those patients who had more complex problems, such as the ongoing effects of sexual abuse history, binge eating or co-morbid illnesses, particularly OCD, made less physical and psychological progress. A day treatment programme is therefore effective for treating those patients with a specific and focused set of problems. Further research is needed to identify whether the content of a day treatment programme can be

modified as a means to treat more complex patients in a more effective way or whether these patients would benefit from being referred to other forms of management approaches.

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Table 1. Participants' demographics

Weight at Baseline (kgs)	Mean = 48.42 SD = 11.69 Range = 30.2 – 119.6
Height (cms)	Mean = 165.44 SD = 7.53 Range = 140 – 188
BMI at Baseline	Mean = 17.67 SD = 4.19 Range = 11.1 – 49.6
Age (yrs)	Mean = 26.83 SD = 8.84 Range = 17 – 57
Ethnicity	White: n = 116 (100 %)
Living	Alone: n = 19 (16.4 %) Cohabiting: n = 34 (29.3%) Family/Friends: n = 63 (54.3 %)
School	Single Sex: n = 32 (28.6 %) Private: n = 33 (29.5 %) Boarding School: n =11 (9.8 %)
Age Onset (yrs)	Mean = 18.44 SD = 6.87 Range = 11 – 45
Duration of Illness (yrs)	Mean = 8.59 SD = 7.29 Range = 1 – 38
Diagnosis	Anorexia Nervosa: n = 96 (82.8 %) Bulimia Nervosa: n = 20 (17.2 %)
Length of Stay (days)	Mean = 169.74 SD = 142.71 Range = 1 – 729
Binge	n = 32 (27.8 %)
Vomit	n = 39 (33.9 %)
Restrict	n = 112 (97.4 %)
Laxative	n = 40 (34.8 %)
Diuretic	n = 4 (3.4 %)

Table 2: Participants' life events

Sexual Abuse	n = 42 (36.2 %)
Death of someone close	n = 21 (18.1 %)
Own divorce	n = 27 (23.3 %)
Parental Separation	n = 52 (44.8 %)
Physical Abuse	n = 35 (30.2 %)

Table 3: Participants' co-morbidities at baseline

Osteoporosis	n = 25 (21.6 %)
Reproductive	n = 13 (11.2 %)
IBS/Bowel	n = 28 (24.1 %)
Beck's Depression Inventory Score	Mean = 35.71 SD = 11.34 Range = 6 – 62
Beck's Anxiety Inventory Score	Mean = 23.99 SD = 10.92 Range = 4 – 52
Drugs	n = 14 (12.1 %)
Self Harm	n = 53 (45.7 %)
Alcohol	n = 24 (20.7 %)
OCD	n = 36 (31.0 %)

Table 4: Participants' outcome at discharge

Change in Body Mass Index (BMI)	Mean = +0.41; SD: 1.82 Range = -5.3 – +6.7 Increase = 56.9 % No Change = 4.3 % Decrease = 38.8 %
Clinician Rated Improvement	Much Improvement: n = 31 (32.3 %) Some Improvement: n = 26 (27.1 %) No Change: n = 24 (25 %) Worse: n = 12 (12.5 %) Much Worse: n = 3 (3.1 %)
Change in Beck's Depression Inventory (BDI) Score	Mean = -11.17; SD = 16.64 Range = -52 – +26 Improved = 74.1 % No Change = 0 % Worse = 25.9 %
Change in Beck's Anxiety Inventory (BAI) Score	Mean = -4.17; SD = 14.21 Range = -40 – +26 Improved = 57.4 % No Change = 1.9 % Worse = 40.7 %
Change in Anorexic Dietary Cognitions (ADC) Score	Mean = -9.59; SD = 11.6 Range = -38.9 – +11.00 Improved = 73.1 % No Change = 9.6 % Worse = 17.3 %
Change in Anorexic Dietary Behaviours (ADB) Score	Mean = -6.21; SD = 11.16 Range = -37.1 – +14.8 Improved = 69.2 % No Change = 5.8 % Worse = 25 %
Change in Bulimic Dietary Cognitions (BDC) Score	Mean = -8.35; SD = 13.21 Range = -41.4 – +11.6 Improved = 66.7 % No Change = 9.8 % Worse = 23.5 %
Change in Bulimic Dietary Behaviours (BDB) Score	Mean = -4.35; SD = 10.53 Range = -35.6 – +13.10 Improved = 51.0 % No Change = 15.7 % Worse = 33.3 %
Change in Stirling Eating Disorders Scale (SEDS) Score	Mean = -50.71; SD = 65.48 Range = -233.10 – +50.6 Improved = 78.8 % No Change = 0 % Worse = 21.2 %